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The Armed Forces Epidemiological Board

By

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"The Armed Forces Epidemiological Board, young in years, born of World War II of a seed sown in wars of history, now finds itself in a position of eminence and authority in the world of medicine."[1]

I. INTRODUCTION

A RECENT Senate Committee Report by the Honorable Hubert H. Humphrey, in describing the Armed Forces Epidemiological Board (AFEB), states: "There is cited at this point but a single such [epidemiological] activity because the general public may be relatively unfamiliar with it."[2] Unfortunately, it has been noted over the years that many in the military medical services who should know about this important organization are also unfamiliar with it.

The Air Force has published several articles since 1956 to try to familiarize medical personnel with proper utilization of this group, as well as with its activities and accomplishments.[1,3] The purpose of this presentation is to do the same for all three medical services.

II. PURPOSE OF THE AFEB

The Armed Forces Epidemiological Board, an outgrowth of the wartime Army Epidemiological Board, was established in 1949 to advise the Surgeons General of the Navy and Air Force, in addition to the Army Surgeon General, upon problems of research in the field of preventive medicine and upon operational problems, as requested. It is a medical research Board at Department of Defense level, consisting of civilian medical scientists of renown in the fields of epidemiology, preventive medicine, internal and tropical medicine, pathology and many other medical specialties. Members of the Board and its various Commissions serve as consultants to the three military services for the control and prevention of diseases and injuries.

This consultant body serves in both an advisory and a participating capacity through active engagement in research of military interest and field investigations on military epidemiological and preventive medicine problems. The latter point is an important one which makes this advisory group different from, and much more effective than, many other governmental and other advisory panels, groups, or boards—i.e., that many AFEB members actively participate in the military medical research contract program, as well as in a large proportion of other medical research work of the National Institutes of Health, other government agencies, the National Research Council (NRC), medical schools and research institutes. In

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this way, they keep current on their medical research capabilities and on the important military problems needing solution, despite the extremely busy academic, administrative and professional duty schedules of these internationally known medical scientists. This enhances their value tremendously as advisors on military medical, preventive medicine, and epidemiological problems.

The purpose of the AFEB may be summarized, then, with the following direct quote from Department of Defense (DOD) Directive 5154.8, which is commonly referred to as the AFEB Charter: "The purpose of this Board is to provide the Military Departments with scientific and research assistance and advice on matters pertaining to problems in preventive medicine."

III. History and Organization

A. *History.* Brigadier General James S. Simmons, M.C., U. S. Army, the late Dean of the Harvard School of Public Health, who was in charge of the Army's Preventive Medicine Service during World War II, recommended the establishment of a "Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army" in December 1940. The rapid expansion of our Armed Forces that year, with the gathering of recruits from all over the United States into large military camps, again brought to the fore many infectious disease problems. The haunting spectre of the twenty million deaths from influenza and pneumonia throughout the world, at the end of World War I, made it imperative that the advice and reseach assistance of the most competent civilian specialists in the country be utilized to help military physicians in preventing a similar catastrophic situation during the ensuing war.

The interesting story concerning the establishment, the early days, and the initial organization of this Board has been well documented in a 1942 article by Dr. Bayne-Jones,[4] then on active duty as a U. S. Army Medical Corps Colonel. He was the first Executive Secretary (at that time called the Administrator) for the Board during World War II, and was General Simmons' right-hand man in organizing and administering the Board after the War Department approved it on 11 January 1941. Probably the first published reference to this Board, however, was made (more than a year before Colonel Bayne-Jones article) in the July 1941 issue of the Army Medical Bulletin.[5] (The Baynes-Jones article carried several references to this July 1941 article).

This coming January (1961) will mark the 20th anniversary of the founding of this organization, which became more commonly known as the Army Epidemiological Board in the latter part of the Second World War. It served with great distinction throughout the war and contributed in large measure to the successful completion of the war missions through its field investigations of epidemic diseases and its research in communicable diseases of importance to military preventive medicine. This resulted in significant savings in effective military manpower. The history of this group's expansion to an Armed Forces Epidemiological Board in 1949 is detailed in the June 1956 issue of the USAF Medical Service Digest.[1]

B. *Organization.* It was at this time (29 November 1949) that the Central Board was expanded from 7 to 9 members—these are usually physicians, although Commission members often are biochemists, physiologists, microbiologists and other medical allied scientists.

When originally established in 1941, in addition to the 7 members of the Central Board, there were 104 members of 10 Commissions. Throughout the years, Commissions have been changed, regrouped and otherwise reorganized, depending on the most pressing military problems of the times. However, their number (12) and missions, as shown by their names which follow in the next section, have remained stable for the past 3 to 4 years.

Members are appointed to the AFEB by the Secretary of the Army, based on the nominations of the three Surgeons General. All members of the Board and its Commissions are appointed Consultants to the Army

Surgeon General, since he has management responsibility for the Board and administers it for the Secretary of the Army and the Department of Defense. These consultants may also be utilized by the Navy and Air Force Surgeons General, of course, in which case the latter defray the travel and other expenses involved. The AFEB Charter authorizes the Board to communicate directly with any military, other governmental, or non-governmental and private agencies, even though it is under the administrative management of the Army.

IV. Recent Research and Other Recent Programs and Accomplishments of the AFEB

The research and other accomplishments of this Board during World War II and the post-war years have been well recorded in the medical literature.[6,7] In addition, it is expected that Dr. Bayne-Jones, who is now one of the senior Board members, will review the early programs and accomplishments in a forthcoming article to commemorate the 20th anniversary of the establishment of the original board. It is hoped that his article will be published late this year or in the first part of 1961. Consequently, only the significant research and other important activities of the AFEB's 12 commissions from 1956 through 1959 are presented below.

1. *Commission on Influenza.* The Asian influenza outbreak of 1957 affords one of the most dramatic examples of the AFEB's value to the Armed Forces. It graphically illustrates the close cooperation and efficient coordination which can and does take place among its civilian medical experts and the military medical authorities in working out solutions to urgent or emergency medical problems. Following the appearance of influenza in the Far East in April 1957, the Army's 406th General Medical Laboratory in Japan quickly recovered the influenza virus strain concerned, which was flown to the Walter Reed Army Institute of Research in Washington, D.C., where it was identified as the new Asian influenza strain within two weeks. Special conferences then took place among the military physicians concerned and the appropriate civilian consultants of the AFEB to prepare against the anticipated outbreaks of Asian influenza in our military populations. Members of the AFEB conducted several epidemiological investigations in overseas areas. Early in the summer of 1957, Dr. Fred M. Davenport, Director of the Commission on Influenza, visited the Far East for an on-the-spot survey of the spreading epidemic (which showed signs of becoming, and later did become, a pandemic). Others went to the Southern hemisphere to study its spread under Chile's winter weather conditions during the latter part of our summer of 1957. AFEB personnel met with the World Health Organization Influenza Advisory Group on 27 June 1957 to coordinate on the AFEB's South American studies of the epidemic pattern of Asian influenza in a winter climate.

As a result of the above activities, recommendations were formulated by the AFEB for a vaccine program in the military services—a monovalent vaccine against the Asian strain—which subsequently formed the basis of the program adopted for civilian use as well. Thus, the AFEB's Commission on Influenza and the military helped to provide the world with the first knowledge of the new strain's characteristics and behavior, which indicated that there was no increased virulence of the A_2 virus or abnormal bacterial complications, although there was the usual elevation of deaths in the aged, infirm, and the very young.

AFEB-sponsored studies at Army, Navy and Air Force bases on the protective value of the new monovalent Asian influenza vaccine were carried out in military populations when the "flu" hit the United States in the Fall of 1957. These studies provided the best controlled evidence of the disease—preventive capacity of this measure. Protection ran over 60% when adequate dosage was given in time. Present studies are being continued on improved formulas looking toward combined vaccines of the future.

Some had feared that the winter of 1957-58 could become as disastrous as that of

1918-19 when 20 million deaths worldwide occurred from influenza and complicating pneumonias. The rapid field and laboratory studies by the AFEB, however, soon helped to dispel these fears and provided for rational and adequate preparations for the control of the Asian influenza epidemic.

In this connection, it is interesting to note that it was because of the fear that influenza and other acute respiratory diseases might reach epidemic proportions during the Army's unprecedented troop expansion in 1940, that the original "Board for the Investigation of Influenza and Other Epidemic Diseases in the Army" was established in early 1941. Dr. Thomas Francis, Jr., Chairman, Department of Epidemiology at the University of Michigan School of Public Health, and the President of the AFEB from 1 January 1958 to 1 April of this year, is a world authority on influenza, having been with the Board since its inception almost twenty years ago. He was also the first Director of the Commission on Influenza for fourteen years. (An article by Dr. Francis, much of it on the functions and accomplishments of the AFEB, was published in the March 1960 issue of JAMA (Volume 172, No. 10) on pp. 993-999 under the title, "Research in Preventive Medicine.")

The military medical services have remained deeply conscious of the importance of influenza and other acute upper respiratory diseases not only because of these past experiences with pandemics, but also because respiratory disease comprises the leading cause of hospitalization and days lost in most years. Studies on these diseases are carried out by the Commission on Acute Respiratory Diseases, the Commission on Streptococcal Diseases, and the Commission on Immunization, besides the Commission on Influenza.

Influenza and upper respiratory diseases were not exceptional problems in the winter of 1958-59 but AFEB workers in these fields renewed their interest at that time in obtaining clarification of certain questions concerning the possibility of collagen disease and allergic effects of adjuvant vaccines and repeated multiple immunizations. Certain studies at Fort Detrick indicated that hyperimmunization may induce certain undesirable physiological changes or physical effects.[8]

Because of this, recommendations were made at a meeting of the ad hoc Committee on Adjuvant Vaccines in June 1958, which have resulted in plans for an Army study of the records of thousands of Fort Dix soldiers inoculated with adjuvant vaccine several years ago by Dr. Jonas E. Salk. Their subsequent medical history will be compared with those of a control group present there at approximately the same time. The ad hoc Committee also proposed to the Air Force that it conduct certain medical and records studies on senior flying officers assigned to Strategic Air Command for the past ten years or more who have received repeated immunizations of varied nature during that time. These records will be compared with a control group of other Air Force officers, similar in most respects except for normal or usual immunization histories. At a second meeting of the Committee in January of this year, the protocol for these studies was formulated. The Strategic Air Command (SAC) Surgeon is now conducting these studies, with the help of the U. S. Air Force Epidemiological Laboratory of the Aerospace Medical Center, under the guidance of this AFEB Committee.

Influenza and other upper respiratory disease studies by the Army and Navy in the East, West, and North central parts of the United States at Fort Dix, Fort Ord and Great Lakes Naval Training Center were complemented by the initiation in Fiscal Year 59 of Air Force-supported studies under Dr. William J. Mogabgab (of Tulane's Department of Medicine) at Keesler Air Force Base to obtain epidemiological and geographical coverage of these diseases in the Deep South. (The Army is now financing these studies.) Dr. Hunein F. Maassab of the University of Michigan School of Public Health was the first to obtain infectious ribonucleic acid (RNA) from in-

fluenza or any of the myxoviruses the early part of last year. Adenovirus vaccine studies of the past few years have given conclusive evidence of their effectiveness in the prevention of these diseases, but commercial pharmaceutical houses concerned were not able to provide vaccine for large scale use during the winter of 1958-59. A contract was let last summer to make adenovirus vaccine available for military recruits by the early part of this year (1960).

Tests of combined influenza and adenovirus vaccines were begun by the Navy at Great Lakes in 1957 and these are being extended by the AFEB in an attempt to develop eventually a vaccine effective against most of the known viruses causing significant upper respiratory infections.

The AFEB, stimulated by etiologic studies on upper respiratory diseases by both the Commissions on Influenza and Acute Respiratory Diseases, and after a special AFEB-sponsored conference on Continuous Cell Line Cultures in April 1959, went on record last year with a recommendation that such human cell cultures not be used for the preparation of antigens for use in humans in order to preclude possible carcinogenesis.

2. *Commission on Acute Respiratory Diseases.* Studies on volunteers sponsored by the Commission on Acute Respiratory Diseases proved in 1959 that the JH and 2060 viruses, isolated several years ago as a result of Navy and AFEB research, are the causative agents of a certain proportion of common colds. Dr. Charles E. Smith of the University of California, Consultant in Preventive Medicine to the three Surgeons General as well as a member of the Central Board, continues his research on the problem of coccidioidomycosis. The recent triservice publication, AFP 160-5-4, TB MED 257, NAVMED P-5052-8, on this subject, which was based to a large extent on Dr. Smith's work, will assist in minimizing this problem at military installations in the Southwestern part of the United States. The commission on Acute Respiratory Diseases has special interest, in conjunction with the Influenza Commission, in the work on adjuvant vaccines and the development of a combined vaccine against many viral upper respiratory infections.

Data from many sources show that the most common cause of illness both in military and in civilian populations is acute respiratory disease. The continuing aim of the Commission on Acute Respiratory Diseases, therefore, is the ultimate prevention and control of these infections. The research program of the Commission includes studies on the etiology, epidemiology, prophylaxis and treatment of respiratory infections in military and civilian populations. Many studies have also been carried out in human volunteers. Outbreaks of Q fever and of histoplasmosis have been studied in military populations. The Commission has also had a continuing interest in basic studies as part of its research program. These projects include investigation of the virus-cell relationship, of the biochemical and morphologic aspects of viral growth, of immune responses with special emphasis on the booster response, of properdin and other systems in natural resistance, of radiation damage and resistance to infection, and of tissue damage from various toxins and from immunologic mechanisms. Space does not permit even summarization of all these studies. Certain of them will be mentioned because of current interest.

Studies by the Commission and by many others have indicated that the great majority of acute respiratory infections are still of unknown etiology. Nevertheless, many new viruses have been isolated from individuals with acute respiratory symptoms, such as the JH and 2060 viruses previously mentioned, and some clearly are associated with a portion of the total illnesses.

Studies in human volunteers employing nasal secretions from persons with common colds have revealed that there are several viruses which can cause these illnesses, that there is apparently no cross immunity between such strains, that a single (or related) secretion will produce immunity in volunteers to challenge re-inoculation with the

same secretion, and that definite, though not complete, neutralization of the infectivity of these nasal secretions can be produced with human gamma globulin. Inoculation experiments in volunteers are under study with many of the newer respiratory disease viruses.

The problem of the relationship between housing and illness has been studied with rather inconclusive results. No clean-cut cause and effect relationship between the type of barracks and the occurrence of respiratory illnesses was shown. Enough problems were encountered, however, to indicate that more data are badly needed.

Even though adenovirus and influenza virus vaccines are potent prophylactic agents, it is apparent that much respiratory disease remains as a military problem. This problem of non-adenovirus, non-influenzal respiratory disease has become one of the major interests of the Commission on Acute Respiratory Diseases. It is a difficult one, but the future is hopeful with real progress being made.

3. *Commission on Streptococcal Diseases.* Concern was shown several years ago for the insufficient use of the very important findings of Dr. Charles H. Rammelkamp, Jr. and co-workers (including Army and USAF medical officers) at Francis E. Warren Air Force Base, Wyoming, on penicillin's marked effectiveness in the prevention of streptococcal infections and rheumatic fevers. Mention should also be made here of the work at the U. S. Naval Medical Research Unit No. 4, Great Lakes, Illinois, under Captain John R. Seal, MC, USN, on penicillin prophylaxis of streptococcal infections. This work was coordinated with Dr. Rammelkamp. A first "Seminar on Penicillin Prophylaxis of Streptococcal Infections" was held by AFEB consultants at the Army's Fort Carson in Colorado in the Fall of 1957. The purpose was to indoctrinate the medical personnel of those areas and stations most concerned in the proper use of this valuable preventive measure.

The Second Fall Seminar on this subject was held under the auspices of the Air Force in October 1958 at Lowry Air Force Base, Colorado. The effect of the previous seminar was clearly seen in the increased interest and thought given this problem by medical officers. The Navy was host to the Third Seminar at Great Lakes Naval Training Center on 5 October 1959. This year's Seminar again was under the auspices of the Army at Fort Dix, New Jersey, on 10 October 1960. Dr. Floyd W. Denny, Jr., a former Army medical officer with the Streptococcal Disease Laboratory at Francis E. Warren AFB, and now a faculty member of Western Reserve's Preventive Medicine Department, was chairman of these seminars. He was also chairman of a special AFEB-sponsored meeting on penicillin reactions and their relation to prophylaxis of streptococcal and rheumatic diseases, which was held early last year. The latter session resulted in significant clarification of the long-standing recommendations of the Commission on Streptococcal Diseases for the penicillin prophylaxis of streptococcal infections in military populations. There is no space to review them here but this important information should be available locally or in the Surgeon's office of major headquarters.

The AFEB was one of the first groups to consider the increasing problem of staphylococcal infections, particularly in hospitals, at a special conference about three years ago. Then the study of staphylococcal infections was assigned by the Board in 1958 to the Commission on Streptococcal Diseases. At the 1960 annual spring meeting of the Board in May, the name of this group was officially changed to the *Commission on Streptococcal and Staphylococcal Diseases* to reflect this added responsibility. The Commission planned an excellent integrated program of research on basic biological considerations of staphylococcal problems to complement the epidemiological work of the United States Public Health Service. This research program, however, could not be fully instituted because of money shortages. The AFEB also gave early consideration to the problems of drug resistant strains of bacteria and the hazards of penicillin sensitization.

Because of the demonstration of type

specific immunity to group A beta-hemolytic streptococci, work of the Commission has recently been directed toward basic studies of M protein. This substance which is produced by the bacteria is responsible for the stimulation of immunity. Presently, broad studies of the enzymes produced by the streptococcus and staphylococcus are being pursued. Treatment of acute rheumatic fever is being investigated at the University of Chile where many patients are available.

4. *Commission on Parasitic Diseases.* The AFEB also showed early interest in encouraging all Government agencies concerned, as well as the entire medical profession of this country, to take heed of tropical disease research requirements of the United States, and of the necessity for education and training of personnel in tropical medicine practices and research. An AFEB recommendation made to the National Research Council on this point several years ago was recently re-emphasized by the Board. This provided the impetus to bring a complete tropical medicine survey of United States' needs into being at the NRC on 1 January 1959 under Doctor Willard Wright, an AFEB consultant, expert in the fields of tropical medicine and parasitology.

The report of an ad hoc committee meeting on malaria in June 1958 resulted in the activation of two AFEB-sponsored projects in FY 59, one of which has already produced important findings which may require the revision of the many textbooks on malaria in regard to the life cycle of the parasite within the Anopheles mosquito.

The advent of the new anthelminthic, dithiazanine, on the chemotherapeutic scene has led to the investigation of its manner of action.

Another accomplishment of the Commission on Parasitic Diseases last year was to obtain some relaxation of Department of Agriculture restrictions in the research use of certain strains of rodent and avian malarial parasites. Commission personnel, with the timely assistance of a letter to the Secretary of Agriculture from the Assistant Secretary of Defense (Health and Medical), helped work out an agreement with Agriculture authorities on this matter, which should stimulate malarial research work.

A review of the status of vector repellents was organized and presented at this Commission's Fall meeting in November 1958, during which the status of the toxicological clearance of the new highly effective repellent, diethyltoluamide, was discussed. The Army's Environmental Health Laboratory is now studying possible chronic or late toxicological effects which will take another year or more before a decision can be made on the safety of this compound. Dr. Thomas H. Weller, Director of the Commission on Parasitic Diseases at the time, visited Lebanon in the summer of 1958 during the crisis and conferred with senior medical officers on their problems of preventive and tropical medicine. This Commission continues to be deeply concerned with the de-emphasis on the subjects of parasitology and tropical medicine in medical school curricula, which results in young doctors entering the Armed Forces today without adequate training in the diagnosis, treatment and prevention of parasitological and tropical diseases. One important aspect of this Commission's program, therefore, as mentioned above, has been an emphasis on the training of young scientists and physicians in these fields.

5. *Commission on Enteric Infections.* The Lebanon crisis of 1958 again brought out the fact that enteric diseases are still the primary medical problem of military task forces, which indicates a high priority requirement for continued research in this field. The Armed Forces Epidemiological Board, as well as the three Surgeons General, certainly had cause for their great concern with the diarrheal problems of the Lebanon action. A fall meeting of the Commission on Enteric Infections was held at Walter Reed Army Institute of Research in October 1958 for the special purpose of reviewing the amebiasis problem and research program. The report of the "Joint Dysentery Unit" on epidemic enteric infections among Communist POW's in Korea was submitted by Dr. Albert V. Hardy at that Commission's Spring 1959 meeting. It emphasizes the inverse relationship between

adequate supplies of water and the incidence of enteric disease. The broad spectrum antibiotics of the tetracycline series were shown to be markedly effective in the treatment of dysenteries.

The recent outbreaks of cholera in Thailand have attracted this Commission's close attention. Members of the Commission participated in planning a joint military-National Institutes of Health-Jefferson Medical School program in anticipation of the spring outbreaks of cholera in Bangkok and vicinity. The planned studies were instituted in Thailand early in 1959, particularly to investigate methods for more rapid bacteriological diagnosis of cholera. The Commission intends to maintain its present interest in problems involving pathological, bacteriological and virological aspects of enteric infections with specific extension of these studies to cholera. Coordination with the Commission on Immunization has been effected for dealing with the problem of developing and testing an effective vaccine against cholera. Research on the diarrheas of viral etiology is currently receiving a great deal of attention by this group.

6. *Commission on Viral Infections.* The Commission on Viral Infections, under the leadership of its present Director, Dr. William McD. Hammon of the University of Pittsburgh, continues its important research on viral arthropod-borne diseases, infectious hepatitis, and other viral diseases not covered by other Commissions of the AFEB. A special trip was made by Dr. Robert McCollum of Yale to aid in the field investigation of an outbreak of hepatitis in Navy ship-based personnel which followed the 1958 Christmas layover of the Mediterranean Fleet in Naples harbor. Native food vendors were considered to have been the source of infection for this outbreak.

As usual, hepatitis has continued to be one of the most important problems in this Commission's area of concern. Vigorous efforts to propagate hepatitis virus in tissue culture systems continue. Encouraging progress has been made within recent years in studies on humans, hemagglutination tests, chimpanzee infections and post-transfusion prophylaxis of hepatitis with gamma globulin. The Army and Air Force Medical Services, through their general hospitals in Germany, cooperated recently in certain AFEB studies on hepatitis. The Navy is doing likewise with its hospital and Preventive Medicine Unit No. 7 in Naples, Italy. Stools have been found to be infectious ten or more days before detectable liver involvement. Army-supported studies by Dr. George S. Mirick in Baltimore hospitals over the past three years have been accumulating data regarding the prevention of hepatitis following blood transfusions by the prophylactic use of gamma globulin. The results are in a preliminary stage but the studies were extended last year in an attempt to obtain statistically valid data more rapidly. Proof of this accomplishment could have great significance in the saving of United States manpower in the event of national catastrophe or war.

Dr. William McD. Hammon travelled to Thailand in September 1958, under the auspices of the State Department, to help that country investigate the causes and epidemiology of an extensive hemorrhagic disease outbreak. He isolated a number of viruses from Aedes aegypti mosquitoes. Results indicate that the agents associated with the Thailand hemorrhagic fever are closely related to the Chikungunga virus originally isolated in Africa and to the dengue viruses. The Commission, by means of a formal recommendation to the Rockefeller Foundation, has stimulated the organization of activities for the integration and coordination of American work on the arthropod-borne viruses, including their analysis and classification. In addition, Dr. Hammon continues his laboratory studies of various virus infections of the Philippine Islands with specimens which he brought back from Clark Air Force Base when he was investigating a possible poliomyelitis outbreak there for the Air Force several years ago.

7. *Commission on Cutaneous Diseases.* The Commission on Cutaneous Diseases met with many military dermatologists from the

three Services in Chicago in December 1958 at the time of the American Academy of Dermatology sessions. As an outcome of this meeting, the Commission learned that many medical officers have little knowledge of the activities, accomplishments and functions of the AFEB. Even the military dermatologists did not know about the Commission on Cutaneous Diseases of the AFEB, which consists primarily of well-known civilian authorities on dermatology. Therefore, efforts have been increased to call attention to the activities of the AFEB and the results of its research to those who should profit the most from such knowledge —i.e., the medical and other medical service officers of our military organizations.

This Commission at its Spring 1959 meeting decided to redirect some of its studies on the antifungal effects of the new antibiotic, griseofulvin. The official statement of the AFEB on the military use of griseofulvin appeared in the September 1960 issue of *The Armed Forces Medical Journal* (AFMJ) Vol. 11: 1054. The therapeutic effectiveness of this antibiotic on certain types of superficial ringworm infections seems to have been established beyond doubt, but the Commission is now investigating the possibility of adverse or side effects. The Air Force has already uncovered some psychomotor disturbances with the continued use of griseofulvin in its flying personnel and has issued warnings against the administration of this drug in persons on flying status.[9,10]

Amphotericin B which has some effect on coccidioidomycosis has proven too toxic for patients to withstand the prolonged course and amounts necessary for the treatment of deep fungal infections. No progress of practical value has been made in studies on penicillin sensitization. An interesting finding which has emerged from the Commission's acne studies is that fluid retention has adverse effects on acne.

8. *Commission on Immunization.* The Commission on Immunization's investigations progressed last year on the nature of the immune response, the influence of hereditary host factors, dose and physiological state of antigen, the interval between injections and combinations of antigens. This group also has worked in recent years on the characterization of properdin and related substances. As for the control by immunization of specific diseases, support of immunological studies is still being provided on typhus fever, bacillary dysentery, cholera, mumps, measles, plague, dengue and arthropod-borne viral diseases, as well as on influenza and other respiratory diseases mentioned earlier. (The Army has an intramural research program in progress on gas gangrene treatment and immunology.)

Special reports on rabies and smallpox were presented at the Commission on Immunization's regular Spring 1959 meeting, including some discussion on the previous year's smallpox outbreak in the Heidelberg area and the imminent standardization of the dried smallpox vaccine by the Services. The USAF developed an early interest in dried smallpox vaccine and actually utilized an English product in the Third Air Force in 1955. AFEB-sponsored studies have demonstrated that globulin prepared from blood taken after successful primary takes is effective and often life-saving in the treatment of complications of smallpox vaccination. This is a good example of how the military medical profession quickly puts into practice the valuable medical research findings of the AFEB.

This Commission held a symposium in the Fall of 1958, in conjunction with the Commission on Epidemiological Survey, on plague immunology, while another symposium on Q fever was held during the Commission on Rickettsial Diseases' regular Spring 1959 meeting. The requirement for a vaccine against sandfly fever was reviewed by the Commission on Parasitic Diseases in late 1958. Development of the latter vaccine is considered to have low priority at the present time because of the continued effectiveness of DDT in the control of sandflies. However, further deployment of troops in the face of nuclear warfare may eventually necessitate the development of a sandfly fever vaccine.

Work on diphtheria and tetanus toxoids and other immunological problems of these diseases continues. This Commission was also of great aid to the three preventive medicine services in their drafting of the new tri-service technical bulletin on "Immunization" (TB MED 114, NAVMED P-5052-15, AFP 160-5-1), which was published on 22 December 1959. Plans for further work by this and other Commissions on combined immunizations and adjuvant vaccines have been discussed previously. The Commission on Immunization also plans for the future to increase its knowledge of fundamental immunology, without any reduction of emphasis on the control of specific communicable diseases. This will provide a sound basis for developing the most effective methods of prevention or control of these conditions.

9. *Commission on Environmental Hygiene.* Since 1956, activities of the Commission on Environmental Hygiene have included a number of field investigations for the military services. One was a study of heat problems in the B-52's at Castle Air Force Base several years ago, and another, a survey of Arctic hygiene in 1957, in Alaska. As a result of the latter, a contract was let by the Arctic Aero Medical Laboratory in FY 59 to Dr. John A. Logan (Professor of Sanitary Engineering at Northwestern University and Deputy Director of this Commission) for the development of his ingenious idea for an oil flush sewage disposal unit for small isolated groups in Arctic climates.

In early 1959, members of the Commission's Occupational Health Group visited Vandenberg Air Force Base, the first operational missile base, to make recommendations on its occupational health program. Dr. Norton Nelson, one of the experts, later visited Patrick Air Force Base to give a talk on occupational health problems of missile launching operations.* Army-supported and AFEB-sponsored heat stress studies of the late Professor Constantin P. Yaglou of Harvard were helped along by the Air Force in the past two years, by its providing certain facilities and personnel at Homestead Air Force Base.

Another Environmental Hygiene activity included a meeting in September 1958 at the United States Public Health Service's Robert A. Taft Sanitary Engineering Center. At this meeting it was concluded that the Commission's principal concern in the future should be the survival of the logistically unsupported military individual or small group with respect to the integration of such requirements as water, food, air, shelter, clothing, waste disposal and protection from infections. Because of greater dispersion of troops in anticipation of nuclear attacks, this type research assumes greater significance. In addition, much interest in the problems of survival in enclosed spaces was evinced last year with a Navy discussion of problems encountered in nuclear submarines, as well as talks by others on the significance of trace contaminants in the atmosphere and the effects of synergism or antagonism among such toxic agents. Survival in enclosed spaces, of course, is of related interest to many space medicine studies.

10. *Commission on Accidental Trauma.* The Commission on Accidental Trauma completely reviewed last year the military research requirements in this field, which again revealed that motor vehicle accidents were the outstanding cause of injuries and loss of manpower. The control of the drinking driver is an important area for development of preventive measures. Studies on prevention of automobile injuries progressed last year to the evaluation of the impact of certain military corrective measures on driving habits.

Some of the earliest coordinated work on the reduction of losses due to accidental trauma was sparked by the AFEB and its Commission on Accidental Trauma, eventually leading the United States Public Health Service and other governmental and private agencies into these fields. Board recommendations on this subject have led to improvement in automobile design (padded dash, door hook-type interlock, redesigned steering wheel and column) and greatly increased

* Dr. Anna Baetjer, another member of this group, was invited by the Air Force to do the same thing in January 1960.

concern with the physical and emotional condition of the driver. Many members of this Commission are in contact with Colonel John Paul Stapp, Chief of the Aerospace Medical Laboratory at Wright-Patterson Air Force Base, Ohio, whom they consider one of the leading authorities on automobile safety design.

Another important area where improvement in accident prevention has been found necessary by this group relates to injuries and deaths from sports and recreational activities. Members of Congress recently showed interest in these military studies on accidental trauma (many of which have been conducted at military bases) by requesting reports on this research under the auspices of the AFEB—e.g., Senator Hubert H. Humphrey and Congressman Kenneth A. Roberts, Chairman of the Special Subcommittee on Traffic Safety.

11. *Commission on Rickettsial Diseases.* The Q Fever Symposium held by this group in early 1959 was such a success that its proceedings are being published by the Walter Reed Army Institute of Research. Also, the current status of insecticides and insect repellents was reviewed at that meeting. Research on the spotted fevers, fluorescent antibody techniques, typhus vaccines, and the growing of rickettsiae in cell-free media occupies the interest of various members of this group. A field trial of E strain living typhus vaccine is being prepared for reasons described in the following section on effects of radiation on infections and immunity.

Other potential problems that might arise in rickettsial diseases such as typhus, under conditions of radiation from fall-out, are the increased severity of the acute disease and increased chance of recrudescence of disease. This Commission provides the continuing stimulus for maintaining interest, studies and personnel in the rickettsial field which may otherwise be neglected and deficient when needed. These diseases can be expected to increase under field or war conditions.

12. *Commission on Epidemiological Survey.* Of the present twelve Commissions of the AFEB, the last one to be organized on a permanent basis (in 1956) is the Commission on Epidemiological Survey. The Army is responsible for research in the area of defense against Biological Warfare. Thus, the Army Surgeon General has been designated to evaluate vaccines and agent effectiveness so that the principal mission of this group is to advise him, through the AFEB, on these matters. The members of this Commission are often at Fort Detrick's Biological Warfare Laboratories and in contact with Chemical Corps authorities on BW. Succeeding Dr. Richard E. Shope (now a Board member), the present Director of this Commission, as of 1 July 1959, is Dr. Theodore H. Woodward, of the University of Maryland Medical School, the physician who first succeeded about ten years ago in specific treatment of typhoid. The research program is designed to increase the ability of the Commission to advise the Army Surgeon General in this area.

V. Effects of Radiation on Infection and Immunity

The effects of radiation on infection and immunity is an important problem that must be considered in this nuclear age. Therefore, the major new orientation within the AFEB, starting in mid-1958, was the emphasis given to effects of prolonged exposure to low levels of ionizing radiation on infection and immunity. Most studies of this nature up to a few years ago were on the effects of *acute* radiation on infection and immunity.

The Board incorporated special studies of low level radiation effects into the general scientific programs of each Commission for 1959 and subsequent fiscal years. These studies on the effects of long term, low dose radiation on infection and immunity should result in further knowledge to protect military and civilian manpower from the extensive fall-out hazards expected to follow a nuclear bomb attack on this country. Already, the research recently begun on this problem has resulted in the publication of several papers. One of the most interesting projects of this nature concerns the possibility that live E Strain typhus vaccine might induce significant disease in persons exposed

to fall-out radiation. The results of this work, being conducted by Dr. Charles L. Wisseman, Jr., also at the University of Maryland Medical School (he is the new Director of the Commission on Rickettsial Diseases), will be awaited with great interest, since the living attenuated type vaccine may be the immunization procedure of choice for the American population *not* previously immunized against typhus and who survive an atomic holocaust.

VI. Utilization of the AFEB by the Three Medical Services

AFEB-sponsored research projects are often conducted at military bases. Thus, medical and other medical service officers may meet AFEB researchers or epidemiological investigators at military stations. Assuming that you are a military medical or other medical service officer, you might actually be assigned by the hospital commander to work with AFEB researchers, if they should be conducting a field investigation or research project at your installation. From your individual standpoint, an opportunity to work as a member of a research team may be afforded you that might not otherwise have been possible. Your personal efforts will be recognized, both officially and often under your own name, or as an original contribution in the medical literature.

You should know about the AFEB in case you uncover a medical problem for which this organization may be able to help provide a solution. Report such through your usual channels with a recommendation for AFEB assistance, if indicated.

You can aid in more rapid reporting, in accordance with your Service's regulations, of acute respiratory and other infectious disease outbreaks, since these still cause excessive morbidity and manpower losses. Such rapid reporting helps meet the objectives of the worldwide influenza surveillance program and thus enables the services to benefit much sooner from AFEB's advice and other efforts in decreasing the manpower drain resulting from influenzal and other disease outbreaks.

You should know about the AFEB regardless of your medical specialty—its work cuts across and covers all of medicine, not just preventive medicine. For example:

Many of its studies are important to that newest medical frontier, Aerospace Medicine. Acute respiratory and enteric diseases would bring up difficult problems in space capsules. Enclosed space studies planned in the future by the Environmental Hygiene Commission may be of related interest to space medicine. Also, their toxicological studies and interests in missile fuels hazards are related to aerospace medicine.

Pediatricians have great interest in Dr. John F. Enders' work on youngsters with measles vaccine and Dr. Robert Ward and Dr. Saul Krugman's Willowbrook studies on infectious hepatitis in children. Dr. Krugman also began to study the Enders' measles vaccine this year.

Obstetrics-gynecology specialists would also be greatly interested in AFEB research, such as that on the prevention of German measles or its effects on the pregnant woman or her fetus.[11]

Hospital staphylococcal infection problems are very important to surgeons, obstetricians-gynecologists, pediatricians and internists.

Internal medicine specialists have many close relationships with AFEB's activities and research results; e.g., the prophylaxis of streptococcal infections and prevention of rheumatic fever or its recurrence. Even cardiologists, those specialists within a specialty, have accepted the results of Dr. Charles H. Rammelkamp's studies at Francis E. Warren Air Force Base on the prevention of rheumatic heart disease.

AFEB consultant services are requested by the Surgeon General, not directly by medical or medical service officers. Therefore, if you believe AFEB help or advice is necessary, you must go through your usual military medical channels to request this. In emergencies, of course, one can always telephone or telegraph higher authorities for such help.

Published literature may be requested

through library channels. AFEB annual and meeting reports have a limited distribution. They may be requested from the surgeon's office of your major military command, if not available locally. Medical officers and others concerned should make efforts to study AFEB reports which cover their fields of interest. Some of these early and interesting findings resulting from AFEB research may not be available in the open medical literature for two or more years. While you may use the information in such reports, it should be remembered that in order to protect the author's rights it should not be quoted or abstracted until it does appear in the open literature.

If you have valuable information for the AFEB on special or new problems, transmittal of this information through channels with the specific suggestion that it be sent to the Board for consideration will be greatly appreciated.

VII. Conclusion

The AFEB, during almost twenty years of close cooperation and teamwork with the medical services, has contributed valuable knowledge and advice in the solution of many military preventive medicine and epidemiological problems. It consists of a patriotic group of highly qualified medical scientists who willingly take time from their already overcrowded schedules to help the military medical services accomplish their primary mission—the conservation of military manpower—best effected through epidemiological knowledge and preventive medicine practices.

The AFEB's breadth of interest and wide range of research, its invaluable aid to the medical services, and its willingness to be of service to all, make it an important asset to the military services as well as to other medical organizations, both within and without the Government. Therefore, this organization and its research accomplishments deserve continued attention throughout your military medical careers, regardless of how remote your medical specialties, duties, and responsibilities may seem from AFEB's fields of interest.

Acknowledgment

The author wishes to express his appreciation to the following for their invaluable advice and critical review of this article:

Dr. Thomas Francis, Jr., President of the AFEB from 1 January 1958 to 1 April 1960; Dr. Gustave J. Dammin, current President of the AFEB; Dr. Charles E. Smith, AFEB member and Chairman of the Committee on Public Information; Dr. Stanhope Bayne-Jones, AFEB member; the Preventive Medicine and Publication Staffs of the three Surgeons General; and to Brig. General Joseph H. McNinch, formerly Commanding General of the Army Medical Research and Development Command.

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Serologic Diagnosis of Typhoid Fever in Previously Immunized Patients*

By

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Typhoid fever attacks 62 persons from single carrier. A discussion of agglutination tests in vaccinated persons is submitted. Study shows that in previously vaccinated individuals typhoid fever cannot be diagnosed on the basis of a single agglutination test. Stool and blood cultures and clinical findings are probably of more value in diagnosing typhoid in these previously vaccinated persons.

INTERPRETATION of results of agglutination tests in the diagnosis of typhoid fever when patients have been vaccinated previously is by no means clear. Beeson[1] believed that the development of H and O agglutinins was strong evidence to support the diagnosis but cautioned that "two sources of misinterpretation should be recognized. Persons inoculated with typhoid vaccine within the previous six to twelve months may have agglutinins. Moreover persons may exhibit an anamnestic reaction" if they had the disease previously or had received typhoid vaccine inoculations. Koomen and Morgan[2] believed that anamnestic reactions did not occur. Wells[3] stated that "many attempts have been made to resolve the problem of serologic diagnosis of typhoid fever in previously vaccinated individuals. This effort has met with little success, however, and under these conditions it must be recognized that no serum titer, regardless of how high, can be regarded as definitely diagnostic. A rising titer particularly for the O antigen, is the strongest evidence that can be obtained by this means." Stitt and Strong[4] stated that "One can only conclude that the results of the Widal reaction in vaccinated individuals must be interpreted with the greatest caution even when the titer is high and rises with progress of the disease." Morgan[5] stated that in those previously vaccinated "H agglutinins tend to persist for a number of years following immunization while O agglutinins fall in 6 months and usually disappear in about a year (making) the O agglutinin titer more valuable in diagnosis." Topley and Wilson[6] stated that "in the inoculated subject, H agglutinins are valueless but a rise in O agglutinins in a patient inoculated more than 6 months previously is suggestive of active infection though by no means diagnostic" and also that "It may be concluded that the only reliable method of diagnosis of enteric fever in the inoculated subject is the isolation of the causative organism."

In July 1958, some 445 men, women and children were exposed to infection at a picnic lunch. Of these people, 62, approximately 14% of those at risk, developed typhoid fever. The serum agglutination reactions of previously vaccinated patients and controls were studied to evaluate the test as an aid in the diagnosis of typhoid fever in previously immunized individuals.

BACKGROUND

The events of the exposure were fairly well documented. The picnic lunch was the only probable alimentary source of infection for all who became ill. Further, it was found that a typhoid carrier had prepared the potato salad the night before and added other ingredients three to four hours before the meal was served. The potato salad was poorly

The opinions expressed herein are those of the authors and are not to be construed as representing an indorsement by the Department of Defense or the Department of the Army.

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TABLE 1

SERUM SPECIMENS COLLECTED IN AUGUST 1958 AND JAN.–FEB. 1959

	Total Number	3–17 Aug Persons	3–17 Aug Sera	Jan.–Feb. Persons	Jan.–Feb. Sera
Patients	51	41	57	32	47
Exposed Controls	225	149	151	113	113
Non-Exposed Controls	212	194	195	70	70

refrigerated. Most of those who became ill as well as a large number who remained well remembered eating the salad.

All of the food handlers were examined but only the one excretor of *S. typhi* was discovered. She was the only one who admitted having had typhoid fever previously and that was in 1946. It was then learned that in 1951 typhoid bacilli were found in two stool cultures obtained from her. Strains of typhoid bacilli isolated from 41 patients were examined at the USAREUR Medical Laboratory and they showed the same biochemical reactions and antigenic structure (9, 12, Vi : d:—) as did the culture from the carrier. Six strains from patients chosen at random and the strain from the food handler were shown to be of the same phage type (C-1) at the CDC laboratory at Chamblee, Georgia.

Exposure to typhoid fever occurred on 13 July. On 26 July, the first patient was hospitalized and the diagnosis was established by culture from 3 patients on 3 August, the 21st day after exposure. A total of 62 patients were admitted to various American military hospitals in Europe and were diagnosed as having typhoid fever, all contracted from this one exposure. *The diagnosis was based on culture in 49 patients* (the USAREUR Medical Laboratory received 41 of these cultures) *and on typical clinical findings in 13 patients.* There were no fatalities or instances of severe hemorrhage or perforation. Most of the patients had a mild clinical course.[7]

There were two groups of controls which were at first considered separately but later were combined into a single group. Exposed controls consisted of individuals who participated in the picnic lunch but did not become ill. Non-exposed controls had not attended the picnic and were well at the time of examination. Only agglutination tests performed at the USAREUR Medical Laboratory on sera obtained from individuals with a verified record of TAB inoculation are described in this report. Table 1 gives the number of sera drawn between 3 and 17 August (21st to 35th day after exposure) and in January and February (approximately six months after exposure).

METHODS

The agglutination tests were performed on serial 2 fold dilutions of sera beginning with 0.25 ml of a 1:20 dilution. One-quarter ml of standard typhoid O antigen (O 901, ETS 58) was added to one set of serum dilutions and 0.25 ml of standard typhoid H antigen (H 901W, ETS 57) was added to another. The final effective dilution of serum started at 1:40. The tubes were incubated in a water bath at 52°C for 18 hours. The highest dilution with visible macroscopic agglutination was recorded as the titer of that serum. Tests were frequently repeated, often as paired sera. All tests were identified only by a code number until results were compiled. Although agglutination tests with *S. para typhi* A, *S. paratyphi* B, and Vi antigens were conducted on all sera, only the reactions with H and O antigens are considered in this report.

The records permitted grouping individuals by interval between last TAB inoculation and the time of serological survey. The intervals were (a) 3 months or less; (b) 4 to 6 months; (c) 7 to 9 months; (d) 10 to 12 months; and (e) more than 12 months between last inoculation and date serum was obtained. There was no significant difference in the distribution by interval among patients and the two groups of controls ($X^2 = 9.70$; 8 D.F.; $P > 20\%$). The number of children, adult males and adult females were compared and their distribution was found not to vary significantly in the 3 groups ($X^2 = 7.56$; 4 D.F.; $P > 10\%$). All the tables which follow were first prepared with

TABLE 2

PATIENT AND CONTROL AGGLUTINATION TITERS* OF SERUM COLLECTED 3–17 AUGUST 1958

	No.		<40	40	80	160	320	640	1280
Patients	57	H	4	6	11	12	19	5	
	57	O	2	5	2	14	25	9	
Controls	346	H	17	15	46	80	169	13	6
	346	O	33	38	78	97	98	1	1

MEAN GEOMETRIC TITERS

Patients H 120.5 H:O ratio 0.62
O 195.2
Control H 164.1 H:O ratio 1.8
O 89.0
t (Patient's H vs Control H) 1.41 P>10%
t (Patient's O vs Control O) 4.43 P<0.1%

* Expressed as reciprocal of the titer.

two groups of controls (Exposed and non-exposed) and then with the two groups combined into one. No significant difference in results was obtained.

RESULTS

Table 2 gives the results on sera obtained from patients and controls during the period 21 to 35 days after exposure. At this time the patients were clinically ill and were receiving chloramphenicol treatment. All controls were free of symptoms. Rectal cultures were performed on many of the exposed controls at the time the serum specimen was obtained. These cultures were uniformly negative.

It is evident (Table 2) that there was a considerable spread in H and O titers among the controls. Many had a titer of less than 1:40 but some had titers as high as 1:1280. The geometric mean titers in patients and controls were not significantly different for H agglutinins but were very significantly different for O agglutinins. When the comparison of patients was restricted to the controls inoculated more than a year before the serum specimen was obtained (Table 3), the difference in geometric mean O agglutinin level was even more marked. Nonetheless, the controls still showed a wide spread in both H and O titers.

The relation of the H and O titers was next studied. The ratio of geometric mean H:O titers was significantly different for patients (below 1.0) and controls (above

TABLE 3

AGGLUTINATION TITERS* IN PATIENTS COMPARED WITH CONTROLS IMMUNIZED MORE THAN 1 YEAR PREVIOUSLY

	No.		<40	40	80	160	320	640	1280
Patients	57	H	4	6	11	12	19	5	
	57	O	2	5	2	14	25	9	
Controls	65	H	2	5	12	20	18	7	1
	65	O	11	11	23	12	8		

MEAN GEOMETRIC TITERS

Patients H 120.5 H:O ratio 0.62
O 195.2
Control H 157.2 H:O ratio 3.44
O 45.7

* Expressed as reciprocal of titer.

TABLE 4

RELATION OF H:O TITERS OF PATIENT AND CONTROL SERA COLLECTED 3–17 AUGUST 1958

HO Relation	Patients	Controls	Total
H=O	14	119	133
H twice O	10	89	99
H more than twice O	5	88	93
O twice H	13	36	49
O more than twice H	15	14	29
	57	346	403

$X^2=44.7$ $P<0.1\%$

1.0) and this difference was more evident as the interval between inoculation and serologic test increased (1.8 for all controls and 3.4 for controls inoculated more than 1 year previously). The relation of H to O agglutinin titers of individual sera is given in Table 4. Again it may be seen that sera with O titers higher than H were found much more frequently among patients than among controls but some controls showed the same levels as did the patients. Table 5 shows that at the 6 month follow-up study, the patients could scarcely be differentiated from the controls.

Sera were obtained from 8 patients before the disease was diagnosed, at a time when the symptoms of typhoid fever were appearing (14th to 20th day after exposure). The results are given in Table 6. It is noteworthy that on first examination these patients already had high O titers and that the HO ratio

TABLE 5

RELATION OF H:O TITERS OF PATIENT AND CONTROL SERA COLLECTED JANUARY–FEBRUARY 1959

HO Relation	Patients	Controls	Total
H=O	15	66	81
H twice O	14	29	43
H more than twice O	2	33	35
O twice H	10	40	50
O more than twice H	3	15	18
	44	183	227

$X^2=7.4$ $P>5\%$.

TABLE 6

TITERS IN 8 PATIENTS DURING 1ST WEEK OF ILLNESS (3RD WEEK AFTER EXPOSURE)

Agglutinin	<40	40	80	160	320	640
H		1	3	3	1	
O				1	4	3

Geometric mean H titer 116.0
Geometric mean O titer 380.5 H:O ratio 0.3

was 0.3. Repeat serum specimens were obtained on all 8 of these patients; 4 one week later, 2 two weeks later, 1 three weeks later and 1 six weeks later. In 6, the same O titer was obtained, in one the 2nd O titer was double the first, and in the other, the second O titer was one-half the level of the first serum.

The question of whether the O agglutinin titer rises significantly during active infection was studied in 38 of the 41 patients including the 8 patients described above. One hundred and twenty-five sera were obtained from these 38 patients between the 14th and 63rd day after exposure. At least one serum was obtained from each patient prior to the 35th day after exposure. Only 6 of these 38 patients had a two tube (four fold) increase in O agglutinin level at any time after the first agglutination test, 13 had a one tube (two fold) increase in O agglutinin level in a subsequent test and in 19 instances the original agglutinin titer was not exceeded in any subsequent test.

DISCUSSION

A large proportion of the immunized population used as controls in this study had high and persistent O agglutinin levels. Of those inoculated more than a year previously, 31% still showed an O agglutinin titer of 1:160 or higher. Many of these individuals had had repeated inoculations of typhoid vaccine. This undoubtedly was one factor affecting the persistence of the agglutinins. However, this immunization history is characteristic of American military persons and their dependents especially in Europe where typhoid "boosters" are given annually. In fact the TAB inoculation program is carried out so

well that there were only 65 out of 437 controls who had not had an inoculation within the previous year.

When exposed to typhoid antigen, many of these individuals showed an accelerated and exaggerated response. There was considerable biologic variation among the controls as is exemplified by the following: A boy, now 12 years old, (son of one of the authors) completed a TAB series on 4 September 1956. He did not attend the picnic lunch (a non-exposed control). On 13 August 1958 his serum titer was less than 1:40 for H, O, A, B and Vi agglutinins. On 21 February 59 his serum again showed no reaction with these antigens and he was given a booster of 0.5 ml of TAB vaccine. Eighteen days later, on 11 March 59, his levels were H 1:2560; O 1:1280; A 1:40; B < 1:40 and Vi 1:5. On 1 April 60, during the early stages of a disease later shown to be mumps, his titers were H < 1:40; O 1:40. Ten days later the titers were H 1:80; O 1:80. Among the controls, there were six children with this pattern of low antibody levels.

Patients with typhoid fever showed a similar accelerated reaction in antibody response. So quickly did titers rise that a subsequent significant increase (four fold or more) in O titer was found in only 6 of 38 patients (16%) and in none of the 8 patients whose first serum specimen was drawn during the first week of symptoms. Evidently in a population of this type it is unlikely that the first of a pair of sera will be obtained early enough in the disease so that a significant rise in O agglutinin in the second specimen can be demonstrated.

The O titer was relatively higher in patients than the H titer while the reverse was true in the controls. This proved to be a very significant statistical finding applicable to the group of patients as compared to the group of controls but not to individual patients and controls.

The findings of this study support the opinion that in previously vaccinated persons the diagnosis of typhoid fever cannot be confirmed on the basis of a single agglutination test. Furthermore, because of the accelerated antibody response, it is unlikely that a significant rise in agglutination titers can be demonstrated, even though acute and convalescent sera are available. In such persons, the clinical diagnosis can best be confirmed by culture of the organism, since it is doubtful that the serological findings will be helpful. Indeed, they may be misleading. A physician, therefore, should concentrate his efforts on recovery of the organism and submit adequate specimens to the laboratory for his purpose.

In a situation where a number of individuals in a vaccinated population develop symptoms and signs of typhoid fever at approximately the same time, and the epidemiological picture points to infection from a single source, it may be possible to confirm or exclude the diagnosis by studying the pattern of the agglutination response of the *group* of patients. It is impossible to confirm the diagnosis in the individual case, but the findings here presented indicate, that a group of previously vaccinated persons who develop clinical typhoid fever, present a distinct pattern of serum titers which can be demonstrated even if only single acute-phase serum was obtained from each patient.

Summary and Conclusions

The H and O agglutinin levels were determined at intervals in previously immunized typhoid fever patients and healthy immunized controls. The patients became ill after eating a picnic lunch prepared in part by a typhoid carrier, thus permitting a single time of exposure to be established. Only individuals with verified immunization records were included in this study.

It was demonstrated that:

a. In a previously immunized individual, a single agglutination test could not be relied upon to indicate the diagnosis of typhoid fever.

b. It is unlikely that paired sera will be obtained early enough to show a rise in titer of O agglutinins because previously immunized individuals apparently have an accelerated antibody reaction to infection.

c. Previously immunized healthy individ-

uals may have high titers of both H and O agglutinins.

d. When a number of individuals are ill with similar symptoms, serologic tests on the group could be of value in establishing or excluding the diagnosis of typhoid fever.

It is concluded that in a previously immunized individual suspected of having typhoid fever, agglutination tests are of little value in diagnosis and that chief reliance should be placed upon stool and blood cultures.

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CORRECTION

A WAITING ROOM IS A WAITING ROOM . . . IS A WAITING ROOM?

By

MAJOR LEONARD BERLOW, *USAF, MSC*

Military Medicine, Vol. 125, 765 (Nov. 1960). Paragraph 12 should read:

A proven, yet inexpensive way to cheer up a gloomy waiting room is with colorful, cheerful pictures. Patients don't *really* want to sit and stare at framed pictures of airplanes or things that remind them of their work. Use pictures with scenes that will get patients in a happy mood—even in the hospital.

Anal Surgery in Military Practice: Report on the Use of Extensive Anal Sphincterotomy

By

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THERE are hardly any commoner causes of prolonged pain and suffering among military personnel than afflictions of the anus and perianal regions.

Palliation, rather than correction of anal diseases is the course often chosen by the medical officer. This course is followed many times by the desire to keep persons on duty particularly when they are in key positions. It is my opinion that surgery should be resorted to more often than the palliative treatment.

As a general surgeon interested in proctology, I believe that re-evaluation of the subject is called for, emphasizing pitfalls and common errors of omission and commission. More significant than whether surgeons agree on the precepts here advocated, particularly the recommendation for sphincterotomy, is the fact that physicians often undergo advanced training in surgery without acquiring enough interest in proctology to assure even minimum proficiency in this important field.

CLINICAL MATERIAL

This report is based on approximately three hundred patients with hemorrhoids, anal fissures, perianal abscess, fistula, and related benign conditions (not including evacuation of acutely thrombosed hemorrhoids) operated on personally, mostly in healthy young and middle-aged males, and on approximately two hundred similar cases operated on by subordinates under my supervision while chief of general surgery during a recent period of four and one half years consecutively in three United States Air Force hospitals. Follow-up to recovery was accomplished in most cases, but occasionally was incomplete because of exigencies of military service.

About 10% of the patients had previously had from one to seven surgical procedures in the anal region by other surgeons. A few patients refused surgery following unsatisfactory surgery elsewhere, choosing to endure their defects rather than risk another failure of treatment. One of the latter was a senior career medical officer with an anal stricture following "routine hemorrhoidectomy." His stenosis was so severe that he was often on the verge of fecal impaction, and despite continuing self-administered dilations his stool was the diameter of an ordinary lead pencil.

Only three of the patients were in serious immediate danger from their anorectal disease. These three had spiking fever and severe systemic reactions to extensive perirectal abscesses, possibly with septicemia.

The basis for a few comments on pilonidal disease involves several hundred patients whose numbers I have not been able to determine, treated in a variety of ways.

THE MILITARY ENVIRONMENT

It may not be fortuitous that recruits are advised to "keep their mouth shut, eyes and bowels open, and never volunteer for anything." Military environments often facilitate advancement of the various anorectal troubles associated with a large, firm, dry stool, whatever the exact physiopathologic mechanisms may be. This is not to say that diarrhea is not also responsible for a share of anal disease, but that the more common association is with constipation. This is especially true of new trainees, who lack the simple knowledge of hygiene necessary for its prevention.

† Dr. Aiken holds the rank of Major, Air Force, Reserve, Medical Corps. He is Commander of the 51st Casualty Staging Group, 1626 Arch Street, Philadelphia.

At remote outposts primitive conditions are sometimes found unless provision has been made for comfortable, efficient sanitary facilities. My first duty as a medical officer was at such a place on the coast of the Arctic Ocean in 1947. Having to go out-of-doors 100 yards to a poorly sheltered trench latrine in subzero weather, some men preferred to try to limit defecation to once every three days and suffered the consequences. On one occasion hemorrhoidal suppositories had to be air-dropped to us for the victims. Eventually, the occurrence of a severe case of scrotal frostbite forced construction of a better latrine.

Although facilities are now generally improved at remote locations, military life still requires a great deal of travelling. This is an environmental stress which promotes constipation and anorectal diseases in persons disposed to them, constitutionally or otherwise. A number of conditions in field and in barracks life can be cited as causes of disturbed personal hygiene and habits which may be links in the chain of physiopathology of anal and perianal disabilities, including pilonidal infections.

The usual absence of bathtubs in barracks is a harassing inconvenience to the military surgeon, the patient, and the patient's supervisor, who has to excuse him from duty all too often to go to the hospital for hot sitz baths.

Indications for Surgery

Palliative treatment may succeed in controlling uncomplicated hemorrhoids, small anal fissures, and certain other conditions. Otherwise, with symptomatic hemorrhoids, anal fissure, fistula or sinus, and refractory cryptitis, the existence of the pathology is the indication for surgery. Usually the degree of symptoms (pain, bleeding, swelling, prolapse, drainage, itching) and the patient's concern over them determine whether he will seek or accept surgical correction before the symptoms become incapacitating. The more experienced and skilled the physician, the more frequently is the indication found to exist, and the more frequently will advised surgery be willingly accepted. If no skilled or interested surgeon is available, then the patient or his physician is prudent in continuing palliative measures rather than employ surgery, other than for the simple drainage of an abscess (which is seldom cured thereby) or for enucleation of acutely thrombosed hemorrhoids (which can be followed by dangerous loss of blood, incidentally).

More crucial than the foregoing is accurately establishing the nature of anorectal pathology by physical, anoscopic, sigmoidoscopic, and radiologic examination when appropriate. Failure to do so is the cardinal pitfall of the physician, who must learn to detect and interpret elusive findings such as slight induration, localized tenderness, mucosal redness, skin changes, sphincteric spasm and hypertrophy, and minimal purulent discharge, in addition to more obvious, advanced, easily diagnosed findings.

Few medical officers seem aware that when anorectal findings are negative in the presence of symptoms, repeating the digital and anoscopic examination from a fresh start on another day may give a different picture, complete with the solution to the problem. Doing so will also increase the physician's perceptive skill in detecting more evanescent clues to correct diagnosis.

For completeness, it should be stated that no physical examination in an adult is thorough without sigmoidoscopy, and that its omission before any anal surgery may constitute gross negligence.

Occasionally anorectal diagnosis is fully established only at the time of contemplated surgery, when optimal relaxation, cleansing, and exposure allow the first really satisfactory examination.

In my experience, failure of physicians to recognize the presence and severity of existing anorectal pathology even though they have looked for it, is the most frequent cause for continuing, bothersome, but not incapacitating symptoms. The resulting self-discipline which the patients are forced to adopt, along with impatience or hostility toward the medical service, are both unnecessary and regrettable. Definitive relief of anorectal symptoms

is rewarded by the highest percentage of happy, grateful patients of any specialty in the fields of medicine and surgery.

While routine examination will not be described, one seldom-used maneuver will be mentioned. Internal hemorrhoids, which are not palpable and may appear unimpressive as the anoscope or proctoscope is being withdrawn, can usually be well demonstrated if the patient, with buttocks held apart, will bear down repeatedly for a few minutes. Hemorrhoidal veins then fill and prolapse slightly, becoming easily, and even alarmingly, evident.

Anesthesia

Except for perianal abscess treated definitively, and for certain special situations, local infiltration anesthesia as advocated by Schneider[1] and others[2] is preferred for anal work, and was used routinely in the last two years of this series. Caudal block[3] is slightly preferable to low spinal (saddle block) anesthesia, while general anesthesia carries with it risks which, however small, are not justified. With practice all hemorrhoids, anal fissures, and fistulae can be corrected under local anesthesia without discomfort. Sufficient sedation will prepare even the most anxious and sensitive patient adequately. One percent lidocaine (xylocaine) with added epinephrine and hyaluronidase is very satisfactory for infiltration if customary precautions are observed. Complete relaxation of the anal sphincters is uniformly obtained and usually a bloodless field as well.

Surgical Management

Hemorrhoids. Several techniques widely used for surgical removal of combined internal and external hemorrhoids are perfectly satisfactory. My preference is for a modified Turrell method[4] using a Buie clamp, with the patient in a prone, semi-flexed position and the buttocks held apart by adhesive tape. Medical officers demonstrate generally adequate knowledge of the fundamentals of these procedures, such as careful hemostasis, removal of redundant skin, and the necessity for leaving strips of epithelium between the radially excised areas. None of these techniques, however, guard against the commonest pitfalls leading to an unhappy result after anorectal surgery, be it for hemorrhoids or any other nonmalignant condition: namely, postoperative pain and difficulty in restoring normal bowel function, the need for distressingly frequent and vigorous anal dilations, and eventual inability to pass soft-formed stools of average caliber. Under "anal dilations" I include what some authors refer to as massage of the anal wounds.

Standard texts[4,5,6,7] and acknowledged authorities[8] do not provide adequate guidance for this problem, other than stressing repeated postoperative dilations, avoidance of mineral oil, and exhorting the reader, in a somewhat supercilious manner, to a high degree of diligence and persistence. Now and then the blame for anal stricture is attributed, often erroneously, to too radical a hemorrhoidectomy.

In the last two and one half years of the present series, the solution to this problem has proved to be the performance of an extensive anal sphincterotomy in conjunction with nearly every routine hemorrhoidectomy. Advocacy of this procedure as an accompaniment to hemorrhoidectomy will probably be thought radical; for, although it is apparently suggested in some foreign lands, it finds little support or even consideration in North American or British literature. Acknowledged authorities in proctology, at least, have not described its use or trial, excepting Eisenhammer.[9]

Finger avulsion of the sphincters, called "divulsion" in older literature, was used at times early in this series, but is not reliable and did not often give the desired result. Division of most of the internal and external sphincters under direct vision with a scalpel is the method of choice for insuring easy bowel movements postoperatively, rapid increase in the caliber of the stool thereafter, and for obviating anal dilation during recovery and healing. Sphincterotomy is done after all hemorrhoidal tissue has been removed, incising the sphincters in the base of the most posterior wound already made. Gen-

erally, the larger the sphincters are, the more can be safely incised. Frequently all that remains is a band of fibers in a slightly thickened posterior rectal wall, forming the upper portion of the internal sphincter.

Confusion has existed[10,11] in identifying anatomical divisions of the anal sphincters at surgery. The important thing is to leave a transverse band of fibers close to the upper anorectal mucosa. Thus the anorectal angle, considered important for continence,[12] is preserved. Lower down and nearing the coccyx, incision may be carried through every muscle fiber to fibro-fatty tissue. As each increment of sphincteric incision is made, the surgeon may withdraw the speculum and palpate remaining sphincter, using the index and middle fingers internally and the thumb externally. This operation is quite different from pectenotomy. One soon learns how much can be divided safely, and may find reassurance in the old maxim that one can nearly always divide an anal sphincter completely once, with impunity, without any incontinence resulting. Buie[13] stated that when necessary for fistula, he completely divided the sphincter in two places without hesitation, a situation with which I have had no experience.

After an extensive sphincterotomy, especially if removal of anal skin has been generous, the operative wounds present an appearance tending to alarm persons not given the opportunity to follow these patients to their gratifying completion.

Caution and careful measuring of the extent of anal sphincterotomy is necessary in multiparous women and in the aged, debilitated patient with a patulous anus and poor sphincter tone. A woman whose first sphincteric division was a third degree tear in labor, had her sphincter divided anteriorly by a surgeon I observed treating her for a perineal fistula in a civilian hospital, and the result was, eventually, a permanent abdominal colostomy after failure of subsequent plastic repairs. On the other hand I have performed virtually complete posterior division of the anal sphincters in several multiparous patients, and have found no tendency to incontinence after the first ten to fourteen postoperative days. In two multiparas requiring anterior sphincterotomy for fistula, staging the procedure has afforded protection from incontinence, as will be elaborated.

Other patients in whom sphincterotomy should be undertaken with less impunity are those with an irritable colon of many years' duration, with a tendency to colitis, or with bouts of diarrhea from any cause. However, at the same time anorectal surgery is employed, amelioration of their other problems is often possible. By attention to the chronically irritable colon, with simple dietary and medicinal measures to promote firmer, less frequent stools, it has been practical to do complete sphincterotomy when necessary without the development of incontinence.

Before ending discussion of hemorrhoidectomy mention should be made of the method of handling one other problem. Where hemorrhoids completely encircle the anus, varicosities can be seen remaining under strips of epithelium separating the extensive wounds already created. The surgeon may feel he has done "all he can do," only to realize that yet another episode of external thrombosis may occur in this patient. These varicosities should be approached from the existing wounds with the tips of Metzenbaum scissors, and punctured, collapsed, or morcellated underneath the strips of skin. Though at times the latter may be elevated from their attachments by this method, no complication has resulted from it in this series.

A plug of gauze impregnated with petrolatum one inch in diameter is inserted and a generous dressing is applied so as to impart some pressure to the anus until the next morning. If believed necessary, some alleviation of pain may be obtained by a rapid, stippling injection of one to two cc. of 50% alcohol very superficially in the wounds with a 26 guage needle. Tetracaine ointment in the primary dressing has not been of any dependable benefit, although often helpful later. Perhaps a Telfa type of surface on the anal tampon will offer an advantage in permitting its easier removal.

Anal Fissure. Opinion is unanimous that

anal fissures which do not heal should be excised. There may be room for discussion, however, over the fact that complete excision also involves partial sphincterotomy, and that in my opinion this is the primary event responsible for cure, tending to correct the pathologic physiology of the hypertrophic, spastic anal sphincter.

Following simple excision it is true that with hot sitz baths, dietary regulation, gentle laxatives, hydrophilic colloids, encouragement, reassurance, and uncomfortable dilations in a cooperative, intelligent patient, good function can be restored by the medical officer who is conscientious and persistent, with only slight risk of recurrence. With a 75% to 90% sphincterotomy, however, less postoperative effort is required and a good result with comfortable course, good morale and cooperation will be assured, regardless of the intelligence of the patient or the persistence of the medical officer.

Sliding skin grafts might shorten healing time, but have not seemed necessary in this series.

50% sphincterotomy for fissure was advocated in some instances over 28 years ago by Rankin.[14] Hughes, in Turrell's text,[6] states that division of part or all of the anal sphincter for fissure was performed originally by Goodsall, and has been revived by Naunton Morgan and Henry Thompson[10] in London. Hughes feels that while the method offers promise, its rationale is not clear.

From the results of its use in this series, extensive subtotal sphincterotomy for anal fissure appears to be a gratifying procedure. Severance of a large, spastic anal sphincter invariably promotes easier, more normal function and regular bowel habits.

Mention should be made of the frequent association of polypoid structures at either end of a fissure, which should be excised with it. Other pathology requiring simultaneous attention is often encountered, such hemorrhoids, cryptitis, and hypertrophic papillae.

Abscess and Fistula. These are grouped together because the latter is the sequel of the former. Confronted with an acute perianal abscess, medical officers too frequently do nothing, or too little, to cure it. The usual attitude is to let the abscess "point" overnight at least, with the intention of incising it "if necessary" the next morning or later. Four times out of five, the abscess has drained spontaneously by the next morning. Then the none-too-eager surgeon, who would rather be doing a thyroidectomy, easily convinces himself that nothing further need be done, that the abscess may not recur ("It's his first one"), that it would be too hard to find its sinus tract now, and that the patient can always return if a fistula develops.

These premises are belied by the facts: namely, nearly all patients with untreated perianal abscesses have recurrences; one-stage definitive treatment is often possible in experienced hands; and the patient who develops a fistula may return, due to circumstances beyond his control, to another medical officer who is unable to find or identify it. In this series a few patients had as many as six to nine perianal abscesses elsewhere over a period of years, never receiving definitive treatment. Also operated on where several men and two women whose fistulae had produced obvious perianal drainage for a year or more, and who had been examined by two to four other medical officers during that time, without identification of the diagnosis.

Patients with an acute perianal abscess not yet drained should be prepared and taken to the operating room when seen. They should rarely be drained under local anesthesia, which is uncomfortable and usually results in a "medical incision." Though not an emergency in the life-threatening sense, the excruciating pain of these lesions is reason enough to justify the effort of providing immediate relief. Under low spinal anesthesia proctoscopy should be done if preparation is adequate, and the abscess, which is usually more fully developed than had been anticipated, should be widely saucerized and packed open.

While there is danger in exploring definitively for the origin of an abscess in that the wrong crypt may be opened, with experience it is usually possible to locate the sinus and crypt and to lay them open, forestalling re-

currence or fistula. If the entire sphincter is to be divided, it is advantageous to place a seton at this time, and postpone sphincterotomy.

After an acute perianal abscess had drained spontaneously, instead of waiting an indeterminate length of time as recommended by most authorities, excellent results have been obtained in this series by proceeding promptly with saucerization of the collasped abscess, tracing its sinus either by gentle probing a few milimeters at a time or by following the palpable induration, and laying it open.

Postponing this effort will often lead, in military service, to recurrence, extension of infection, or inadvertent neglect in other hands after changes of station. One patient with a draining perianal sinus in this series had been subjected to four previous surgical procedures, including the insertion of much packing material peri-rectally through the external incision. X-rays taken after lipiodol injection showed sinuses and spaces about the rectum up to the brim of the bony pelvis. Cure followed establishment of drainage into the rectum and staged division of the anal sphincter, converting the internal and external openings into one wound.

Excellent detailed discussion of fistulae is given in Hughes' portion of Turrell's text,[6] where staged sphincterotomy is described with the use of a seton (from a Greek word for thread). The average medical officer entering service has never heard of a seton.

In the present series a seton has been used about fifteen times, with sphincterotomy two to three weeks later, or even in two subsequent stages if incontinence was feared. Whereas the ends of a freshly cut sphincter are seen to retract, the ends retract very little after a seton has been in place long enough to cause fibrosis, which tends to anchor the muscle fibers. In fact, the cut ends then may stay so close together that additional "landscaping" (saucerization) is necessary to insure adequate drainage of the exposed fistula.

Setons in this series were of umbilical tape or large silk suture material, usually placed during initial surgery for pelvi-rectal or deep perianal abscess, when its upper extent pointed into the rectal wall, or even if not, provided the upward extent was so large that external drainage would be difficult to maintain without sphincterotomy. In the latter instance the rectum was entered above the sphincter from within the abscess, a mucosal incision made down to the external wound, and a seton placed loosely around the sphincter.

In two multiparous women with anterior fistulae where incontinence seemed a possibility, setons permitted safe sphincterotomy in stages. As an adjunct to recovery, patients in this situation were given perineal exercises to do frequently.

In two patients where primary complete sphincterotomy was done for perirectal abcesses, bleeding was excessive in the early postoperative period. With setons, very little bleeding was noted at later sphincterotomy.

Cryptitis and Anal Spasm. Various combinations of anal infection are dealt with in standard texts. In patients with anoproctitis and cryptitis of non-specific etiology, multiple cryptotomies and excision of enlarged papillae afforded complete relief of symptoms. Excess mucosa and skin along the incisions is removed to insure free drainage. Experience in this series indicates that in such cases a sphincterotomy of 50% or more promotes postoperative comfort, restoration of function, and completeness of relief, as it does after hemorrhoidectomy and fissurectomy.

The performance of multiple small procedures in any given case of chronic, nonmalignant anorectal disease is common in proctologic practice.

Other Anal Diseases. Other surgical diseases of the anus are not commonly encountered in military service. While mild prolapse is controllable by high internal hemorrhoidectomy, more severe prolapse is not within the scope of this report. Anal stenosis, present in two infants in this series, yields to surgery. No patients with incontinence presented themselves; several patients with extensive condylomata acuminata were

treated surgically, but no malignancies were seen. Pruritis ani, frequently seen, usually responded to medical treatment temporarily, and no case is included in this series as such. Pruritis, however, was a symptom in many of the patients whose various primary anal conditions were treated surgically. Foreign bodies and wounds of the anus are rarely seen in peacetime.

One other serious error may befall the military surgeon who is not closely supervised. If he has not been warned, he may schedule an anal operation and a groin or scrotal operation in the same patient at the same sitting. There is no surer way that this to invite catastrophic infection of the groin or scrotal wound.

Pilonidal Disease. Having run the gamut of methods of dealing with pilonidal disease, I am sure that the interests of the patient, the military service, and the surgeon would be served best by limiting surgery to incision and drainage where possible. For definitive treatment an open or largely open method is best. Postoperatively the wound should be scraped, cauterized, shaved, and meticulously cared for every few days until weeks after healing seems final. The patient must participate actively in his case with daily hot baths, mild antiseptics and fresh dressings self-administered. Prolonged after-care is the key to success. Medical officers who think they are curing most pilonidal disease, unless they have followed their patients at least six months, are mistaken in more than two-thirds of the cases. One patient in this series had suffered four unsuccessful attempts at definitive cure in military hospitals, and was in a state of reactive depression. His fifth operation was successful.

Postoperative Care

Postoperative care in proctology is not mysterious or difficult. The key to success is personally checking the wounds frequently. Probably the greatest hazard is urinary tract infection from catheterization. In male patients all catheterizations should be done by a medical officer rather than by assistants. Systemic antibiotics are rarely used except to prevent urinary tract infections.

Wound healing presented few problems. Hot sitz baths have been liberally used after removal of the first dressing. After changing the first dressing, narcotics are hardly ever given. A regular diet is usually in order, *ad lib.*

Postoperative care must be individualized; however, experience in this series indicates that frequent use of an extensive anal sphincterotomy insures a more comfortable, successful, and less troublesome postoperative course.

Results

The average follow-up in this series was three months. While longer follow-up is desirable, nevertheless the results have been excellent in 95% or more of the cases of anal disease. The same is not true of pilonidal disease.

Among unsatisfactory results, one patient who had a routine hemorrhoidectomy (with partial sphincterotomy) for bleeding, prolapsing hemorrhoids developed a perianal abscess four months later.

A patient requiring hemorrhoidectomy who also had severe pruritis ani, experienced no improvement in his pruritis. Although pruritis usually improved after an indicated hemorrhoidectomy, he had been warned that it might not improve, and thus was not overly disappointed.

One patient had to be returned to the operating room for control of bleeding after hemorrhoidectomy.

Three patients with perirectal abscess treated by unroofing (attempted saucerization) and packing with iodoform gauze, had recurrences. These cases should have had an opening made in the rectal wall and provision made for delayed sphincterotomy by means of a seton. It is expected that some other patients in whom an internal opening was not identified during incision of a perianal abscess probably developed recurrences.

Although an extensive sphincterotomy takes longer to heal and requires attention to hot sitz baths for a longer time, the patients are so comfortable, and the results

so gratifying, that the longer period of healing is believed worth the trouble. The formation of a fixed trough[15] at the site of sphincterotomy along which secretions and feces may pass, was not noted in any instance.

Twice a so-called subcutaneous sphincterotomy was performed through a small incision posterior to the wound of excision of a fissure. In each case a hematoma formed which had to be opened for drainage. Sphincterotomy under direct vision is therefore recommended. Vessels requiring ligation will sometimes be encountered.

There was no mortality in this series.

Summary

Experiences are reported from the practice of anorectal surgery during a four and one half year period in three successive hospitals of the United States Air Force. Based on these experiences the common pitfalls encountered by the average medical officer are emphasized.

Salient features of surgical technique in benign anorectal diseases are discussed, stressing routine employment of local infiltration anesthesia, and the advantages of more frequent use of extensive anal sphincterotomy than has been advocated heretofore, as an accompaniment to hemorrhoidectomy, fissurectomy, fistulotomy, and cryptotomy.

A few comments on treatment of pilonidal disease are included in the report. An open method of surgical treatment is recommended.

Postoperative care and results of anorectal surgery in this series are briefly discussed, and mention is made of the patients with known unsatisfactory results.

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Current Therapy of Urinary Tract Infection*

By

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WE, AS CLINICIANS, are interested in urinary tract infections, principally because they are among the most common clinical infections seen in practice and are second only to the respiratory tract infections in incidence of occurrence,[1] and also because they very often present a diagnostic and therapeutic challenge.

With this in mind, I would like to condense for you some of the bacteriological findings in urinary tract infections and correlate the therapy with our present day antibacterials which have proved to be useful.

FREQUENCY OF OCCURRENCE

The frequency of occurrence of certain pathogenic bacteria in urine is somewhat variable from a statistical standpoint.[2,3] This variability depends largely on the type and selection of patients studied, the geographic location, and the volume of data analysed. However, the following species, genus, or groups of bacteria will account for about 90% of the offending organisms found in urinary tract infections.[2,3,4,5,6,7] These percentile occurrences were substantiated by my study of 1,017 unselected cases.[8]

Coli-aerogenes group	35–50%
Pseudomonas genus	10–20%
Streptococcus fecalis species (of enterococci)	10–20%
Staphylococcus aureus variety (of micrococcus)	9–20%
Proteus genus	6–12%
Paracolon group	3–5%

PREVALENT BACTERIA

I would like to briefly re-emphasize the most effective drugs in use today against some of these more prevalent bacteria.

The Coli-aerogenes group, our most common offender, will respond to chloramphenicol or nitrofurantoin in approximately three-fourths of the cases. The tetracyclines, streptomycin, or sulfonamides are effective in about one-third of the cases.

Pseudomonas aeruginosa is the most resistant to treatment and responds to the tetracyclines, chloramphenicol or nitrofurantoin in about 20% of the cases only.

Proteus genus is generally resistant. However, some species, such as Proteus mirabilis, respond favorably to chloramphenicol, streptomycin, or nitrofurantoin.

Streptococcus fecalis will be successfully treated with nitrofurantoin or chloramphenicol in 75% of the cases. Approximately 50% will respond to the tetracyclines, erythromycin, or novobiocin.

Staphylococcus aureus, except for the resistant varieties, responds well to all major common antibiotics as well as nitrofurantoin.

THE PROBLEM OF RESISTANCE

Drug resistance is an ever-growing problem and is directly related to the universal use of antibacterials.[9] This general use has not only caused an increase in resistant species, but has also brought about changes in the flora of urinary tract infections.[10] Also we are seeing a slight increase in the frequency of the gram negative groups which are the more resistant types.[11] Estimates have been made that two-thirds of the general population have been exposed to an antibiotic at least one time. One-third has received a sulfonamide.[12] We are fortunate in that many present day antibacterials are still capable of controlling the majority of these infections.[13,14] The more resistant mutants are uncommon in the acute cases and are most likely to be found in the less frequent types of chronic, complicated, recurrent or mixed infections.

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The problem has many facets but a simplified approach is needed. Here are a few measures we can effect in clinical practice:

1. Early identification of the bacterium with specific therapy. Avoid "hit-or-miss" use of antibacterials.

2. In mixed infections the major and minor organisms must be treated with equal vigor if we are to prevent super-infection or overgrowth infections from what was formerly the minor organism.[9, 14, 15, 16]

3. We must suspect, discover and correct anatomical pathological processes and other non-infectious factors in all cases, but especially in those cases failing to respond as expected, cases running a chronic course, and those with mixed cultures.[9, 17, 18]

4. Beware of overtreating lesser simple infections. Employ a cautious evaluation of the disease at hand and the possible risk involved in its treatment.[19]

5. Institute longer periods of observation until a "bacteriological cure" is assured.[3, 18, 20]

6. Make use of multiple antibacterials for their synergistic effect if indicated but avoid possible antagonistic combinations of these agents.[16, 21, 22]

Effective Drugs

I realize that the principal interest of the clinician is the individual question of the use of a specific antibacterial agent. However, time does not permit a thorough discussion of each drug in relation to each bacterium. Therefore, let us consider the agents most effective against urinary infections.[23]

Chloramphenicol still has the widest and most effective activity range against infections of the urinary tract. It is particularly useful against the Coliform group, certain Proteus species, the micrococci and the enterococci. Nitrofurantoin parallels chloramphenicol in its spectrum but is slightly less effective.

Erythromycin, novobiocin and oleandomycin are used successfully against members of Staphylococcus aureus and Streptococcus fecalis species. These drugs are usually much inferior in treating gram negative bacteria except on occasions some of the Proteus species will be susceptible to novobiocin.

Table 1

The Usual *in vitro* Sensitivity Patterns of the More Common Bacteria Against the Commonly Used Antibacterial Agents

	Coli-aerogenes group	Pseudomonas genus	Proteus genus	Staphylococcus aureus	Streptococcus fecalis
Chloramphenicol Nitrofurantoin	+	−	+	+	+
Erythromycin Novobiocin Oleandomycin	−	−	−	+	+
Tetracyclines Streptomycin	+	±	±	+	+
Sulfonamides	+	−	−	−	+

The tetracycline group of agents is active in treating the Coli-aerogenes group, streptococci and staphylococci.

Streptomycin has a similar range but is less effective over long periods of therapy against the gram positive bacteria but shows greater activity when used in treating certain species of the Proteus group, as compared to the tetracyclines.

Neomycin, when used parenterally, is very active against most of the bacteria in these infections. The best use is for Coli-aerogenes and Proteus and the least is against Pseudomonas organisms. However, it must be limited in its use due to its potential toxicity.

The sulfonamides are still very useful against E. Coli and Streptococcus fecalis and are to be remembered in combination therapy with antibiotics.

Resistant Strains

Since the difficult problems lie in the management of the more resistant infections, here are a few useful combinations of antibacterials that can be used to advantage.

Proteus treated with streptomycin in combination with chloramphenicol or the triple

TABLE 2

USEFUL ANTIBACTERIAL COMBINATIONS AGAINST CERTAIN BACTERIA

Proteus Genus:	Streptomycin+Chloramphenicol Chloramphenicol+Sulfonamide+Nitrofurantoin
Streptococcus fecalis:	Penicillin+Streptomycin Streptomycin+Erythromycin (or Oleandomycin or Novobiocin) Tetracyclines+Oleandomycin
Pseudomonas aeruginosa:	Streptomycin+Oxytetracycline Polymyxin+Oxytetracycline
Aerobacter aerogenes:	Polymyxin+Tetracycline

combination of a sulfonamide plus chloramphenicol plus nitrofurantoin are good choices.[24]

Streptococcus fecalis strains can be managed with a mixture of penicillin and streptomycin, or a mixture of erythromycin and streptomycin.[25] Also, orally, you can make effective use of tetracycline and oleandomycin in combination.[26, 27]

Pseudomonas aeruginosa can be treated with a combination of streptomycin and oxytetracycline.[20, 28]

Polymyxin B given with oxytetracycline for Pseudomonas and Polymyxin B with tetracycline for Aerobacter are occasionally synergistic.[23, 29]

ANTIBIOTICS IN EXTRAORDINARY CASES

Several other antibiotics are available and are worthy of mention but these should be reserved for the extraordinary cases in which a resistance to the more widely used drugs has been exhibited.

Resistant staphylococcal infections are uncommon in the urinary tract but when found use can be made of ristocetin, vancomycin, or carbomycin.

Kanamycin, used parenterally, will control many staphylococcal infections and also shows some promise against certain of the Coli-aerogenes group.[30]

As previously mentioned, Polymyxin B has its greatest potency against Pseudomonas aeruginosa and some of the Aerobacter aerogenes varieties, but its toxicity is too great to consider for parenteral use except in extreme cases.[23]

In long term therapy of infections, as in chronic and recurrent cases, much use can be made of the sulfonamides, nitrofurantoin or mandelamine since they can be given over extended periods of time at reduced dosages.[31] Whereas antibiotics given over these longer periods could create undesirable problems.

CONCLUSION

In summary, the identification and susceptibility of bacteria to drugs are important tools in the choice of an antibacterial agent but should not supersede the clinical judgment of the therapist in his selection.

With the strides being made today in the development of new antibiotics, there is hope that, among these, will be found agents that will successfully combat the present resistant strains. Meanwhile, we are aware of the vast potentialities at our disposal and must use them wisely so we do not further complicate an already difficult problem.

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Experimental Use of the M3A3 Smoke Generator as an Insecticidal Fogging Machine

By
JOSEPH HIRSH*

(With three illustrations)

THE Todd Insecticidal Fog Applicator (TIFA) and the Oliver Mist Sprayer (Fig. 1) are insect fogging machines in use on a number of military reservations. These machines convert a solution or suspension of an insecticide into a fog or mist. The type and density of fog can be varied to meet terrain or meteorological conditions by altering the size of the particle emitted, ranging from 1/2 micron to 200 microns in diameter. In these machines the insecticide is first atomized mechanically into a spray which is then fractionated by the action of a blast of high velocity air. The dissipating energy further splits these droplets into fog as it expands beyond the fog nozzle. The cost of these machines is approximately $2,000.

While they can be readily mounted on a jeep or other small vehicle and have a considerable range in target effectiveness—the TIFA because of its 360 degree movable ratchet base, and the Oliver, because of its rotatable jointed nozzle—both are limited in use to areas accessible by roadways. Because of their weight and relative difficulty of transport they are not well adapted to rough or swampy terrain not contiguous to access roads.

Inaccessible swampy areas which may serve as insect breeding grounds and are therefore in need of DDT*ing*, up to this time have been approached only from the air. While effective, the aerial spray over a large area is a costly method of insect control. Moreover vehicles for air spraying, such as the H-21, are not always readily available.

The Oliver Corp.

FIG. 1. Oliver Mist Sprayer.

During the 1960 training period for National Guard and Reserve troops at Camp Drum, Watertown, New York, an experiment was undertaken to DDT dense, swampy and inaccessible areas with the Smoke Generator M3A3, a standard item of equipment in the Army Chemical Company. The purpose of the experiment was to determine whether this generator could be put to practical use as field equipment in mosquito control. Moreover in demonstrating its practicability it was hoped to relieve the constant pressure placed upon Post Engineering personnel to meet the environmental sanitary needs which always are greater than the personnel and equipment available. Further, this experiment served the purpose of affording Reserve Chemical Company personnel train-

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The Commanding Officer of the Provisional Hospital at Camp Drum was Colonel Louis N. Altshuler, MC, USA. The author wishes to acknowledge with gratitude the warm support by Colonel Altshuler of the idea and plan in utilizing the Smoke Generator as a mosquito control device.

ing in the use of these generators in a program having practical health and budgetary advantages on the post. Lastly it was hoped that if the experiment proved successful it would make possible consideration of the assignment of such items of equipment to Preventive Medicine Companies as part of their T/O and E. The experiment succeeded sufficiently to justify the hopes projected for it.

The M3A3 Smoke Generator (Fig. 2) uses a pulse jet engine for producing smoke screens. The extreme simplicity of engine design facilitates maintenance and operation.

The engine operates on gasoline with an octane rating of 76 or higher. Smoke is produced by injecting fog oil into the extremely hot exhaust gases of the engine. The generator normally operates on approximately 40 gallons of fog oil an hour. It is readily transportable on trailer, truck or boat. Its weight is 137 pounds empty and 156 pounds serviced and it has an overall length of 40 inches.

Two basic problems involved in the use of the Smoke Generator for DDT fogging were (1) the possibility of explosion when the kerosene, which is the vehicle for DDT spray, came in contact with the high temperature of the generator and (2) the possibility of rapid breakdown and decomposition of DDT on being subjected to the high temperatures of the Smoke Generator. Our experiment indicated that there is no danger of explosion of DDT in kerosene inasmuch as the flash points range of kerosene is between 100° and 165° F. This approximates that of Diesel Oil #2 (with a flash point of 130° F.) which is very similar to the SGF, commonly used in the M3A3. The use of Naphtha suspensions of DDT was deemed to be *far more hazardous* in view of the fact that its flash point range is 20°-100° F. Our experiment proved that the M3A3 does not break down or decompose DDT suspensions of 5-7 percent.

Army Photo

FIG. 2. M3A3 Smoke Generator Mounted on Jeep Trailer.

Army Photo

FIG. 3. Initial DDT fog being delivered from trailer mounted M3A3 Smoke Generator.

The M3A3 proved to be extremely versatile in setting up a smoke-insecticidal fog. Seven percent DDT in kerosene produced an excellent heavy white fog capable of rising in excess of 100 feet in heavy concentration depending upon the wind, or remaining thick and low-lying. A measure of its penetration 24 hours after initial application and following four hours of intense rainfall was manifested by the heavy penetrating odor of the solution and the slick film on broad leaf vegetation exposed to the fog.

The use of the M3A3 as an insecticidal fogging unit proved to be completely effective when employed with due consideration

to terrain and meteorologic conditions. Its obvious advantages over larger fogging and misting equipment are:

1. Its extreme portability and adaptability to various types of terrain.
2. Its ability to deliver more and denser "smoke" than comparable commercial apparatus.
3. Its relative inexpensiveness ($800.00).

It appears that the M3A3 may be improved as an insecticidal fogging machine by the development of a blower system and rotatable nozzle which would make possible the delivery of concentrated DDT laden fogs to particular localized targets.

In view of the success of this experiment, the M3A3 Smoke Generators should be considered for assignment to Engineering and Preventive Medicine personnel to augment or replace heavier items of fogging equipment.

Distraction Analgesia Using the "Stereogesic Portable"

By

ROBERT SCHERMER, D.D.S.

(With two illustrations)

ANESTHETISTS have demonstrated the use of music in the practice of dentistry and surgery. If "music hath charms to soothe the savage beast" it also has the power to soothe the minds of all subjected to its influence. Soft, melodious tones repeated over and over again in lullaby fashion have been employed for many centuries by so-called "charmers" of animals and reptiles. The more monotonous the music, the more effective it will be, provided it is melodious and not discordant or harsh. It is low, soft, simple melody, composed of a few notes and repeated over and over again.[1]

HISTORY

Franz Anton Mesmer went to Paris where he erected the Temple of God of Health which was thronged with people who were afflicted. In creating the proper environment for the Temple, throughout the entire Temple a low harmonious melody of aeolian harps was heard from a distant chamber.[2]

"There's a doctor who practises in East Ham Hospital, and he'll always show it to you. What he does is this: he gets a tape recorder and asks his patients what type of music they like. If a patient says; 'I like Palm Court' he takes a recording of Palm Court music. He gives the patient earphones and plays the music to him loudly while he is operating. I saw him do a hernia, open up a knee, open several fingers, and do a couple of varicose veins. Sometimes he had to give more anaesthetic, but not always. And whenever he turned off the music in the middle of the operation the patients started to wriggle and move and obviously dislike what was going on. So undoubtedly the music was having an anaesthetic effect.

Now, the significance of this procedure seems to be: if you do something to a patient which is sufficiently *distracting,* then he hasn't, apparently, enough neurones left over to appreciate pain as he would do normally.

There are many examples of this. A man scores a try in a Rugby match in the heat of the moment and doesn't notice until afterwards that he has broken a collar-bone. Many soldiers have been seriously wounded during a battle—had a hand blown off or something like that—but have done nothing about it until the heat of the moment has passed. I remember seeing a medical orderly injecting mercury into a patient's backsides. He did it in a strange way, and I only appreciated it later. He would slap the patient's right buttock. As he slapped he would stick the needle into the left buttock. He was distracted at the moment of impact.

I have also seen nurses at Guy's give patients ordinary injections. They would call over another nurse before giving it. One of them would slap the patient on the thigh and, at the same time, the other would stick in the needle higher up. You've also probably heard about dentists on a fair-ground in the old days. They'd take out a tooth while somebody banged a big drum. We used to think it was to drown the cries of the patients, but perhaps the banging of the drum distracted the patients and so produced less pain."[3]

It is accepted truism that anticipation is greater than realization and the proverb "a coward dies a thousand deaths" demonstrates the action of mind to reality. Surgeons and dentists alike, continually prescribe sedation prior to surgery to allay anticipation and mental anxiety prior to dental procedures.

Conditioning patients for surgery and un-

pleasant procedures is as old as history. From a chapter of Genesis in the *Bible,* it is told that Adam had his rib removed during sleep.[4] The cycle of suggestion has again returned to the present day practise where suggestion is used in the preparation of the patient for surgical procedures as well as dental operations. It is a known fact that patients who are properly conditioned are better controlled patients requiring less anesthesia and having a minimum of postoperative bleeding, pain, and discomfort.

Among the many reasons for dental fears and phobias are the noises and pain of the drill, insertion of the needle, the feeling of bone cracking, sight of blood, fear of after-pain and complications, fear of being unconscious during general anesthesia, and a very important fear induced by hearsay. Dr. Edmund Jacobs, in his experiments with relaxation, concluded that it is a psychological fact that fear cannot be experienced when muscles are completely relaxed. It has also been found that the threshold of pain is raised proportionately as the muscles are relaxed.[4]

Kilpatrick[5] states music is another comfort aid to patients. Stereophonic music played through appropriate speakers or stereophonic earphones is being used.

Gardner[6] reports success in using an audio system through earphones and stereophonic tapes with a background noise. He also states a control box in a patient's lap brings quiet confidence; instead of feeling victimized by the dental procedure, he feels some measure of control through the two buttons at his fingertips. Thus the effects of music and the control box allay the unconscious anticipation of pain.[7]

King[8], using audio hypnosis as a pain killer, uses sweet music heard through earphones until a crucial moment when drilling begins; the sound of falling rain is piped in and down out the sound of the drill.

Victoria Falls and Dr. Livingstone

"A curious sort of mesmerism is created by so much roaring, tumbling water. If you stare at it long enough you have the feeling that you are being gently lifted from the earth. You float in a solitary detachment, and it is not unpleasant. Nothing seems to be of much importance, except that this pattern should go on constantly repeating itself that these millions of tons of water should keep on arriving poising for a moment as they inevitably spill over the brink, and then vanish into the depths below. One can understand the morbid attraction waterfalls have for people about to commit suicide—and such tragedies do occur here from time to time. These people avoid the prospect of a horrible death among the crocodiles upstream; they want to fall with the water. Often it has a soothing effect, making them behave right up to the end in the most matter of fact way. Quite recently, I was told, a woman came up to a man who was standing on the brink and said to him casually. 'Would you mind holding my handbag for a minute?' He took the bag and then she jumped."[9]

Cook[10] defines the difference between white noise[11] and white sound[11a] which he says may be used effectively for analgesia. He uses these in conjunction with a strong rhythmic element in the music on 33⅓ R.P.M. stereo records. One groove on the record is for sound, noise, or water; the other groove for music. He states the subject should clearly understand one point; the purpose of this is to help him maintain a state of relaxation and constantly keep in mind the idea of "going limp" and staying that way. The volume control knob is his defense against acquiring tension in the face of discomfort.

The "Stereogesic Portable" is a gradual development through fourteen years of research covering over four thousand clinical cases aimed at bringing comfort and relaxation to dental patients by means of music. In 1946, a method of using earphones connected to a specially designed pushbutton radio was devised.[12] Patients wearing earphones were able to tune in any program or station by self-controlled push button.[13] One button was for static noise to be used for distraction in case of pain. This was a novel idea to divert the attention of the patient

from grinding or drilling procedures.[14] The noise was received on a standard pushbutton radio on which the tuning dial is turned to any position other than a transmitting station's frequency. The volume control is then increased to maximum. The resultant accoustical noise produced by the loud speaker is a composite of thermal agitation noise, man-made interference, cosmic noise, and possible precipitation static. Its aural qualities are determined largely by the band width and other characteristics of the associated audio reproducing equipment. The next progressive step was to use piped in commercial music connected to the headphones. Later, high fidelity records and high fidelity tapes were used. The specially prepared music was relaxing to the dental patients. At present, the ultimate in stereophonic analgesic sound equipment—the "Stereogesic Portable" is being used.

Equipment

The equipment consists primarily of a specially designed stereophonic tape player. This playback machine can be placed in any room in the dental office . . . in the laboratory, in the dentist's business office, or any other place; it does not have to be in the operatory. The music used is especially selected for the purpose and is recorded on continuous-playing, endless-loop tapes in an easy-to-handle, tamper-proof cartridge. The tapes play for approximately a half hour at the end of which time they will repeat indefinitely if desired; or the machine is stopped and a different tape instantly inserted. Well-padded, comfortable, stereophonic earphones are provided for the patients. They are connected to the tape player by a cord on which is fastened a patient-control box. The control box can be held in the patient's hand, clamped to the chair arm or hung on the side of the dental unit when not in use. Also, coming from the control box is a cord with an earphone for the dentist's use in monitoring the patient's reactions. At the same time, one ear is left free for communication with his assistant, the patient, or the telephone. An auxiliary speaker may be used for the waiting room if desired. This auxiliary speaker, of course, can be put on the wall or any other place.

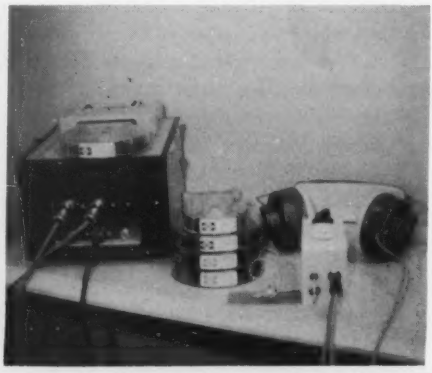

Fig. 1. Portable stereophonic playback machine; stereophonic headphones for patient; Music Control for patients to hold; monitoring earphone for dentist; music tapes in cartridges.

Fig. 2. Taking blood pressure on a patient five minutes after placing stereophonic headphones.

Operation

In operation, the doctor first selects the tape which he wishes the patient to hear—classical, semi-classical, or popular. The character of the general tapes should contain: (1) music of one variety, (2) one orchestra or combo, (3) no changes in volume of the recording, (4) no vocals, (5) familiar music, and (6) music that is harmonious, rhythmic, and soothing. The tape is inserted into the playback machine and

the patient seated in the chair with the stereophonic headset in place. The doctor places his private earphone in position before starting operation and the assistant turns the tape player on. Five outlets are built into the tape player so that several different operatories could be connected up, if desired. Obviously, if there is only one playback machine and several outlets being used (headphones or speakers) all will have to listen to the same music tapes. However, the analgesic sound plays only through the patient control unit and therefore is not heard through the speaker, since the speaker is connected directly to the playback unit.

On the control box which the patient holds are two buttons—a round white one and a flat black one. The black button controls the volume of the music from zero to the maximum volume which would be necessary. The music has been specially recorded with the elimination of some of the higher frequencies which, while they are desirable for home use in a large room, would be objectionable in the enclosed area of the head set. The volume range has been compressed to assure pleasant freedom from extra loud or quiet passages and the tape life of many thousands of plays affords the most satisfactory and economical music for the dental office.

The white control button introduces an electronic "masking" or analgesic sound, which has been variously described as the sound of falling rain, a water fall, or rushing air. This sound also is regulated from zero to a maximum optimum effect.

The earphones serve the dual purpose of shutting out undesirable sounds and introducing pleasant, relaxing ones. Most patients will turn the music on to a point which sounds best to the individual. The dentist, either through his private earphone or speaker, is able at all times to tell the degree to which the music or the analgesic sound volume is turned up. As the patient feels pain or becomes uncomfortable during the operation, the analgesic sound can be accentuated through means of the white control, even to a point where it overrides the sound of the music. The analgesic sound is produced on tape and is of such a nature that it will have the effect of greatly reducing (if not concelling out entirely) the consciousness of pain. The patient is instructed to turn up the analgesic sound as loud as he can tolerate it when he has pain. As soon as the pain subsides, he may turn it down or off altogether. The louder the toleration it seems the greater the analgesic effect. It has been found that in many cases, the music alone is sufficient to relax the patient and distract the mind from the dental operation. Also, the earphones keep out all outside office noises such as miscellaneous conversation, the click of instruments and the sound of high-speed handpieces.

Clinical Benefits

Bringing music to patients this modern and personal way means a relaxed and cooperative patient. It provides a psychological distraction from operative work and takes the ordeal out of the dental visit. A more cooperative patient generally facilitates the doctor's work. The equipment is tremendously helpful when working with children, resulting in a general speed-up of operative procedures. In addition, it greatly reduces the use of sedatives, tranquilizers, and analgesic or hypnotic drugs.

Although the majority of patients will be receptive to Stereogesic sound, there might be some who do not want it. Even those who are at first less receptive to the idea will, after continuous use over several visits enjoy the benefits of Stereogesic sound. The dentist will find that continuous usage will increase his proficiency in obtaining maximum results and develop his confidence in its beneficial effect on patients. Patients, having tried the equipment on previous visits, will come in asking for it again, and will tell other patients about it, making it an ideal practice builder and truly a piece of prestige equipment in any dental office.

If you inflict pain on a person he will get an increase of pulse rate and a fall in blood pressure. Now what happens if you use distraction analgesia by stereophonic music and

analgesia sound, when you tell a patient he will not feel pain and then take out a tooth? The large majority of patients do not get an increased pulse rate nor a fall of blood pressure. This is very important, because it means you are not producing only analgesia but true anesthesia or blocking out the awareness of pain—that the pain threshold is in fact raised. In most cases where patients prefer anesthesia, either local or general, they can get by with half the usual amount of anesthesia when using the "Stereogesic Portable."

How does *distraction analgesia* prevent pain through the auditory experience? I believe it is by the process of *adaptation. Adaptation* depends upon a constant, motionless application of the stimulus. Any rapid change of stimulus will interfere with the process of adaptation. It is possible to apply a weak stimulus and increase the intensity of it so gradually that adaptation sets in and continues from the onset of stimulation. In this manner the stimulus may become very intense without arousing any sensation whatsoever, the sense organ adapting as fast as the change takes place. Adaptation of pressure sensations is an important factor in everyday life. People do not sense the pressure of their clothing or that of rings on fingers, or that exerted on the nose and ears by spectacles. When eyeglasses are first worn, they arouse a number of often unpleasant touch qualities which soon disappear with adaptation.

Pain qualities also undergo adaptation provided the stimulus remains constant. For example the pain that is aroused from the prick of a needle adapts gradually into qualities of pressure and eventually to indifference.[15]

On 1200 patients who had always required local anesthetic or gas analgesia for tooth grinding, cavity preparation, and scaling of teeth, the "Stereogesic" produced effective distraction analgesia in 76% of the patients. Extractions were done on 115 children and on 200 adults with the aid of only a topical anesthetic and the "Stereogesic". The blood pressure in 87% of the patients returned to a lower level after the headphones were placed for five minutes prior to the operative procedures.

Conclusions

An important point is that *distraction analgesia* produced by music and sound in dentistry has been used and misused for many years. Its advantages as a pain reliever are generally acknowledged, and still we find dentists arguing pro and con as to its value in the dental office. The arguments boil down to a few facts:

(1) Distraction-analgesia will not completely eliminate pain in all cases.
(2) Distration-analgesia will definitely relax and quiet a patient sufficiently to make most dental procedures acceptable to him.
(3) Patients who benefit from Distraction-analgesia leave the dental office in a happy frame of mind, keep their appointments more regularly, and are the best boosters the dentist has.
(4) The dentist will become as enthusiastic as the patients after he has experienced the use of the "Stereogesic".

Other advantages of the "Stereogesic" are: You now have a patient who does not talk, and whose muscles are so relaxed that you can actually work on the teeth without fighting a quivering tongue, cheek, and lip. It is usually a rather pleasant experience for the patient, particularly those who may be "needle-shy". A few suggested uses for the "Stereogesic" are as follows:

(1) All dental cavities
(2) Incision of alveolar and pyorrhetic abscesses
(3) Scaling of hypersensitive teeth
(4) To eliminate gagging
(5) Removal of pyorrhetic teeth
(6) Removal of deciduous teeth
(7) In combination with local anesthesia for prolonged operative and surgical procedures such as insertion of dental implants.

During our daily life we are constantly

exposed to the influence of suggestions. It is in this way that we can best handle the child as well as the adult, and perform dental work otherwise impossible. The dentist should never try to perform dental work when nervous tension is present, either in the patient or himself. Both must have the proper psychic stability for success.[16] Analgesia is an effective way of controlling discomfort and pain in almost all operative procedures used in dentistry.[17]

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The safety of the Stereogesic to human hearing has been tested by the Speech and Hearing Center of Western Reserve University in Cleveland, Ohio, and will be reported in a forthcoming article in *Dental Survey* written by Dr. Howard E. Kessler.

On pages 1088-1093 of August 1960 issue of *Dental Survey,* Dr. Edward Podolsky, M.D., of Brooklyn, N.Y., reports on "Some Early Experiments with Music as a Dental Anesthetic."

EDITORIALS

Our Recent Annual Meeting

WE ARE happy to report that our recent Annual Meeting held at the Mayflower Hotel in Washington was well attended and that the papers presented were well received. Needless to say, the many social activities were also well attended.

On the convention floor we saw the uniforms of many nations and heard many foreign languages. English was the language used in presenting all the papers. Those international delegates present understood our English. It is a great credit to them that they have conquered another language. We Americans should do likewise. With rapid flights in jet planes which can bring us to foreign lands in a very short time, the need for the knowledge of more than one language is readily apparent. Maybe some day nations will agree on one language which all will learn in addition to the native tongue. When we think of traveling from India to the United States in the matter of a comparatively few hours, as did a physician from India, we more fully realize how small this world is getting, travel-wise.

The President of our Association, Rear Admiral Richard A. Kern, was a ubiquitous officer at the convention events. His brilliant performance as Master of Ceremonies at the Honors Night Dinner will be remembered forever by those who had the good fortune to be among the 540 persons who attended.

Well, we shall soon start another year. Our officers for 1961 as elected at the business meeting on October 31 are:

President: Dr. Leroy E. Burney, The Surgeon General of the U. S. Public Health Service.

First Vice-President: Major General James P. Cooney, U. S. Army, Retired, now Vice-President for Medical Affairs, American Cancer Society, New York.

Second Vice-President: Rear Admiral Calvin B. Galloway, Medical Corps, U. S. Navy, Assistant Chief of Bureau for Research and Military Medical Specialties, Bureau of Medicine and Surgery, Washington.

Third Vice-President: Colonel Robert C. Kimberly, Medical Corps, Maryland National Guard, and a member of the Surgical Staff, Johns Hopkins Hospital, Baltimore.

Fourth Vice-President: Dr. William S. Middleton, Chief Medical Director, Veterans Administration, Washington.

Fifth Vice-President: Major General M. Samuel White, U. S. Air Force Medical Corps, and Surgeon, Air Training Command, Randolph Air Force Base, Texas.

Sixth Vice-President: Brigadier General Frank A. Wilson, Medical Corps, U. S. Army Reserve, and Executive Vice-President, Joint Blood Council, Washington.

Secretary: Colonel Robert E. Bitner, U. S. Army, Retired.

As to the papers presented at the meeting we will publish them during 1961 in our journal, MILITARY MEDICINE.

Now if you were not one of the fortunate persons among the over 2,000 who attended the 67th Annual Meeting put these dates down for next year's meeting—November 6, 7, and 8 (1961). Reserve these days now for your Association's 68th meeting.

Let Us Serve

This month in many lands the birthday of a great teacher and a healer of physical and mental disease will be celebrated.

From his teachings we can learn much for our conduct toward our fellow man. But unless we also practice what He taught all that teaching helps us little as an individual.

Is it not time that nations think on some of these things? Smiling dictators whose mood changes in seconds because of a very thin and imperfect veneer of respect for their fellow man cannot be expected to change their ways. Such individuals cannot be trusted. They have no intention to be of service to others. Their ways are firmly cemented together.

In contrast to such dictators there are many persons in this world that are earnestly desirous of following the teachings of that great Teacher. Many of these persons are found in the world of medicine. In that world our fellow man is met because of a great need, either physical or mental. His social position, his wealth, or his poverty are not to be considered. His need for help is paramount. When we meet this need we are following the teachings of that great Teacher and Physician.

Let us do all this humbly. Then we can have joyous hearts and say, "MERRY CHRISTMAS" and mean it.

Letter to the Editor

To the Editor:

Reference is made to page 628 of Military Medicine, September 1960 ("What Price Hospitalization?" by Lt. Col. T. E. Baker): "The Air Force (cost) is, understandably, low since its 'long-term' cases are generally cared for in the Army's specialized facilities." The author's definition of a long-term case is unknown. However, in 1958 only 10 percent of all hospitalized Air Force cases were for conditions with an average stay of 30 days or more. Of all such 30-day plus cases, the majority (79 percent) were treated at Air Force hospitals. Furthermore, in the same year, less than one percent (.96%) of all hospitalized Air Force cases were for conditions with an average stay of 90 days or more. Of all such 90-day plus cases, the majority (57%) were treated at Air Force hospitals. These figures do not agree with Colonel Baker's statement even if all discharges of our patients from Navy, USPHS, VA, and Army hospitals are combined.

Sincerely,

R. T. Jenkins,
Brig. Gen., USAF, MC,
Director, Dir./Plans and
Hospitalization, Office
Surgeon General, U.S.A.F.

SUSTAINING MEMBERS

It is a privilege to list the firms who have joined The Association of Military Surgeons as Sustaining Members. We gratefully acknowledge their support.

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Around the World

(Ser. III, No. 26)

By

CLAUDIUS F. MAYER, M.D.

ZALA, Somogy and other Transdanubian counties of *Hungary* used to be infamous for the *declining birth-rate of the peasants* who, for economic reasons and in an effort to keep their property undivided for a single heir, invented their own system of birth control, the "one-child system" or *egyke* (in Hungarian). While such a system was sure to lead to extinction, a much more accelerated rate of the national suicide resulted from the communist laws which permit the *abortions without any restriction.* Now, the number of abortions is alarmingly rising so that the National Council of Hungarian Women thought it necessary to organize a Special Committee for the education of women in the prevention of conception and for the distribution of the means. Physicians and nurses of the industrial plants and of the health districts also help in this "education" of the young Hungarian womenhood.

The tremendous damage which the communist system brought about in the Hungarian nation is best shown by the demographical figures which were officially issued a few months ago. These figures let us be almost convinced that we are facing here a *deliberately planned genocide* in the sense of the 1951 Geneva Convention. In 1927, when the population of Hungary was less by almost a million and a half, the natural growth of the population was 67,873; during the next year, it was 78,197. Now, in 1959, when the population is numerically larger by a million and a half than it was in 1927 and 1928, the natural increase was only 47,295. The *effect of the abortion laws* is still more obvious when we look at the natural increase during the past 4-5 years: in 1955 it was 112,582, in 1956 it was 88,574, in 1957 only 63,577, in 1958 already 60,562, and in 1959 a still heavier decline to 47,295. In the countries around Hungary, the natural increase of the population is comparatively much higher. Some believe that the systematic weakening of this non-Slavic nation in the midst of a ring of Slavic people is a long-range political goal of Moskva.

This year (1960) the *Hungarian Public Health Service* celebrated its fifteen years of existence "after the liberation." Numerous essays were prepared which compared the health services to the people during the capitalistic era and during the "socialistic" regime. From these essays we learn that great efforts have been made to take away from the Hungarian doctors the whole administrative management of prevention and treatment. The *nationalization of the people's health* was, however, not a cure-all for all the "mistakes" of the past. Now, the whole Hungary is criss-crossed by the networks of the various medical services which are under State control. There is a network of district physicians, another for specialty dispensaries, another for hospitals and sanatoria, another for industrial dispensaries, one for tuberculosis, one against venereal and skin diseases, another for oncology and tumors, another for trachoma, for neuropsychiatry, for sports medicine, and so on. It is claimed by the state that its services are qualitatively and quantitatively better than in the previous years. Of course, during and *after the Second World War, times were so bad,* occasionally, that the patients had to enter the hospitals under the assumption that the bedding and other such necessities would be provided by themselves for their own use. There even was a period when dying patients were requested to return to their homes so that the hospital statistics would not show any alarming rate of mortality.

The *number of physicians* is now 15,200, which is too large for such a small country as Hungary. Though in this way the hospitals may have larger medical staffs, there

also is a great *increase in the cost of hospitalization.* Thus, for instance, in the János Hospital at Budapest, the annual expenses per hospital bed were 20,000 forints in 1954 (about $2000), while in 1960 the same hospital bed costs 36,430 forints (about $3500). The number of medical students is growing, nevertheless; in 1959, it was 5589. The number of the hospital auxiliary personnel was 18,780 in the same year.

In 1953, the *BCG vaccination of the newborn* was made obligatory. The same obligation was extended in 1958 to all persons below 20 years of age. Extensive screening examinations are made with x-ray, yet among the tuberculotics who are admitted to the various sanatoria more than 75% remained undetected by this screening. Those tuberculotics who are covered by social insurance have a completely free treatment in the hospitals, and they are entitled to receive sick pay for a period of two years. Today, the number of tuberculotics in Hungary is 150,000, which is about 1.5% of the total population.

The fight *against VD* was much more successful, In 1947, the number of the fresh syphilis cases, right after the Russian "liberation," was 15,061, and this number was reduced to 6 (say six!) in 1959. The disappearance of the chronic latent and of the complicated syphilitic cases is also striking, as everywhere else in the world. Furthermore, the number of *connatal syphilitic cases* also became a rarity. I wonder how long it will be so, since the obligatory prenuptial medical examinations have been discarded for some time. Perhaps the Hungarian Women's Council which sent a delegation to the Health Ministry with a request to reintroduce the prenuptial examinations will succeed in these efforts.

Among the *infectious diseases in Hungary* the most prevalent were, in 1959 and 1960, influenza, measles, scarlet fever, and epidemic hepatitis. This year, dysentery cases have also increased. In ratios per 10,000 people, the chief *causes of death* in Hungary are heart diseases (20.6), cancer (16.1) cerebral hemorrhage (12.1), pneumonia (6.1), tuberculosis (3.1), intestinal inflammations (1.2) and other infections (1.2). As is well known, in 1941 a serious poliomyelitis epidemic struck Hungary, and at that time only 5% of the sick had proper medical treatment. Efforts for the treatment of paralytic polio developed about 1956. Now, there is a *Poliomyelitis hospital* with 200 beds at the Rose Hill. In 1957, 2400 polio cases occurred and 1605 of them were treated in this hospital. Vaccination against polio is now obligatory for everyone below 18 years of age (Denmark is the only other country with obligatory polio immunization).

In spite of all these achievements of the communistic regime, however, the rigid statistical figures show that the *Hungarian nation is condemned to extinction* under communism. The national natural increase, as mentioned above, is steadily decreasing year after year because, while the mortality rate remains around 10 per 1000, the number of live births was reduced from a high 23 per 1000 in 1955 to 15.2 per 1000 in 1959. A hundred and some years ago Ignatius Philip Semmelweis liberated the Hungarian women from the plague of puerperal fever. Who shall not free them from the evil of abortion?

Paprika still remains the most famous product of *Szeged* in Hungary. It is in this city that years ago, when he was teaching biochemistry at the local university, Szentgyörgyi discovered vitamin C in the fresh paprika. Many of the processors of the paprika products, however, often suffered from *toxicomycosis* due to the inhalation of certain moulds of the paprika and to breathing the dust of hot pepper. Mostly women and young girls were the sufferers. Automation came to the paprika of *Szeged,* however and the *"Szeged illness,"* as the disease was locally known, is now gone "with the exhaust wind."

The *Max Plank Institute for Physiology of Work,* which started last fall in Berlin, was transferred to Dortmund, into the richly industrialized Ruhr Valley. It has a large staff who carry on the research activities in several departments and laboratories; there

is a special laboratory for each special aspect of industrial physiology and psychology. For instance, a laboratory for the study of industrial noise, another for the study of the heat regulation at work in a hot environment. Each laboratory has a head, a physician, a psychologist, or an engineer, and technical aids. Every attempt is being made for the coordination of the research work of the new institute with the practice of German industry.

An *International Fair* was held at Brno, *Czechoslovakia,* at which various interesting *scientific instruments* were exhibited by many European countries. From Czechoslovakia, the small table model of an electron microscope held the medical interest. The general impression of the visitors was that now all countries are eager to advance their industry of *precision instruments,* and they are gradually preparing for the automation of industrial production. Many instruments were seen from every country for the detection and quantitative measurement of *radiation by radioactive* substances. This is a natural development, due to the wider use of radioactive isotopes in the most diverse fields of science and technic. Russia exhibited a universal *galvanometer (T 3-1919)* for the measurement of the contamination of hands and clothes by alpha and beta rays, and a roentgenometer (RM-1-M) for measurement of roentgen therapeutic dosage and of gamma radiation. The *metrologists* are using more and more the oscillographic technic. The Viennese L. Seibold firm offered various new types of instruments to measure the pH.

The *Third International Medical Electronics Conference* was held last July at Olympia, London. It was organized by a section of the Institute of Electrical Engineers and by the International Federation for Medical Electronics. The topics were such as instrumentation in medicine and biology, medical electronics in space flight, isotopes and radiology, use of pills containing miniature radio transmitters, implanted cardiac pacemakers, ballisto-cardiography in the U.S.S.R., phonocardiography, electronic aids for blind and deaf, automatic control of artificial limbs, continuous monitoring of fetal heart.

Meanwhile, with all the modern instruments and devices produced by factories, *a mother's love* is still all important. Recently a boy was taken to a Hampstead (England) hospital by his mother. The boy had a hernia of the meninges (a meningocele), a congenital condition which is usually not treated by surgery for a few months, but it is treated with a protective daily dressing and the use of a dome-shaped fitting semi-rigid cap. The mother found it difficult to hold the conventional cap in place so she took an ordinary *kitchen sieve* which was not only lighter than the cap but also more permeable to air. She found this excellent. Perhaps the long handle should be removed first!

The *Princess Astrid Institute of Tropical Medicine* at Leopoldville, in the former Belgian Congo, will also now share the ill-fate of this African newborn area of independence. Formerly, this institute had been very active, and its researches included all fields of bacteriology as well as several geopathological problems. In a series of studies, the staff of the institute was successful, for instance, in the isolation of a number of *new Salmonella strains* (such as the S. galiema, gwaai, etc.). Recently, the staff isolated a *Type II polio virus,* the first time from the stool of a Congo infant who was paralyzed in both legs. Serological studies of the rural areas of the High Congo showed that antibodies against all three polio viruses are present in the blood of the Congolese from the 7th year of life on. In reference to *atherosclerosis,* the Institute found that slight forms of the disease appear quite early in *Congo Negroes,* much earlier than in white people, yet serious forms of atherosclerosis with necrosis and calcification and obstruction, are relatively infrequent.

"Hakuri" is the *white diarrhea* in Japanese. The disease is known throughout Japan, Korea, Taiwan and in Peiping. Formerly, it went under the term of "pseudocholera infantum." It is a seasonal, infantile diarrhea characterized by milky

white stools, vomiting, and mild respiratory symptoms. After a week's sickness, it ends in complete recovery. It is seen strictly in the winter months, and it attacks only infants, either sporadically or in epidemics. The cause of the disease is not known. Recently, members of the Pediatric Department of the *Nagoya University School of Medicine* detected cytoplasmic inclusions (particles and globular bodies) in several organs, in the liver, the mesenteric lymph nodes, spleen, lung, etc. This makes it probable that Hakuri is a virus disease.

At a recent visit to Japan, a Canadian physician (Lt. Col. W. E. Kunstler) became interested in the *rehabilitation of Hiroshima.* He studied various contemporary reports, and the results of later surveys, and he came to the conclusion that *many mistakes were made* in Hiroshima during the so-called "rehabilitation" phase of Civil Defense. Some of the mistakes are: (1) While Hiroshima had excellent hospital facilities with excellent medical staffs, and while many of the doctors survived the bombing, their efforts were mostly wasted due to *lack of triage,* the sorting of casualties into priority classes. The doctors spent much time on patients who were obviously dying, and neglected some who could have been saved in time. The basic principle should be that all the manpower, time, and equipment facilities should be spent on patients who will possibly survive. The medical officer who does the sorting should be the most excellently trained physician; (2) It was found that an *information center* would be extremely important in such disasters. In lack of such a facility, previously evacuated inhabitants of the town filtered back to the bombed area, and began to search for their relatives in the ruins, thereby exposing themselves to radiation; (3) Immediate reconstruction of housing is not essential, but *hospital facilities* and infirmaries should be first provided on a large scale; (4) The civilian *bombed victims should be considered as "war veterans"* at the time when they are seeking employment. During the past few years, many of the Hiroshima victims could not secure jobs, because they were looked upon with as much fear as if they had infectious tuberculosis. At present, a campaign is under way in Japan to wipe out any record of people who were victims of atomic bombing in order not to handicap their future.

The other day I had a chance to observe the sequelae of a *tropical ulcer of the leg* which someone acquired in *Burma* more than 16 years ago *during the jungle warfare.* The patient's leg was covered with brownish-black discolored skin from the knees down to the ankles, with signs of grafting operations and former ulcerations. Under his stocking, a round callous indolent ulcer was hidden beneath a piece of toilet paper used for dressing. Tropical ulcer, or *ulcus phagaedenicum* was one of the worst plagues of the jungle warfare. Its chief characteristic is its creeping progress downward. Bacteriologists will usually find hemolytic staphylo- and streptococci at the base of the ulcer, eventually Pseudomonas in symbiosis with spirilla, spirochetes, and fusiform bacilli. Nobody knows the true cause of these voracious ulcers; they occur mostly in people of otherwise good health and proper nutrition. Geographically, the ulcers are more often seen in Burma than in the Malayan jungles. While such an ulcer usually heals in several months, here it was still creeping after 16 years of existence. In the experience of Dutch military surgeons, the oligodynamic effect of aluminum ions is especially praised, while internal treatment with antibiotics seems to be useless.

The President of the American Association for the Advancement of Science attended this year's (17th) *International Congress for the History of Medicine* which was held in Athens, Cos and Delphi, as well as at Epidaurus in honor of the 24th centennial celebration of the birth of Hippocrates, Father of Medicine. There were celebrations at the theater of the Asklepian at Epidaurus, at Cos where the famous plane tree of Hippocrates is still growing, and at the Apollonian oracle at Delphi. At the Cos meeting, the Hippocratic Oath was read in a solemn ceremony. The papers which the participants

presented to the congress were of course about ancient Greek medicine, Alexandrian medicine and Byzantine medicine.

Among the recent deaths we find Sir *Victor Richardson* (1884-1960), former Director-General of the Medical Services, of the Air Ministry of Great Britain. He was one of the leading pioneers in helping to build up the R.A.F. Medical Branch. He had already retired in 1941. Prof. *Max Lüdin* (1883-1960), founder of the chair of radiology at the Basel University also died. He was pioneer of radiology in Switzerland. Sir *Gordon Gordon-Taylor* (1878-1960), the doyen of British surgeons for many years, who performed more "hindquarter" amputations than any other surgeon, died after a road accident.

Australian dermatologists discovered that some of the local sources of *ringworm infection* of the human skin are the *pet kangaroos*. Small epidemics of tinea were recently reported in 4 families by a member of the Skin Clinic of the Queen Elizabeth Hospital *in Adelaide*. This is the second(!) such report in the world medical literature. In each case, *Trichophyton mentagrophytes* could be cultivated from the skin lesions. Curiously enough, the first report of kangaroo-transmitted tinea was diagnosed and reported last year (1959) from the United States (USPHS Communicable Disease Center, Atlanta, Ga.).

In our days the importance of the *ABC warfare* is steadily growing day after day. It is mostly the atomic weapon we are reading about. Yet, a comparatively much more dangerous weapon is the use of the toxin of Clostridium botulinum—the *botulin*, which represents a transition between the chemical and bacteriological warfare. Indeed, it should be considered the weapon of *"noiseless warfare."* Botulin was isolated in crystalline form the first time in 1946, and since then experiments have been made everywhere for the wartime use of this deadly poison. The chemical and toxicological characteristics of botulin have been recently discussed by a Swiss military medical ABC Officer who asserts that botulin is the most toxic among all known poisons. One mg of the toxin could kill 1200 tons of living matter (equal to 17,150 men, each of 70 kg weight), and *20 gram of botulin could kill all mankind(?)*, or in other words for the killing of the 400,000 inhabitants of Zürich about 20 mg botulin would be necessary (theoretically). By inhalation, in the form of an aerosol, the toxin is several thousand times more toxic, and quicker acting than at ingestion. No reliable treatment exists for the curare-like poisoning caused by botulin. Neither can the intoxication be prevented by boiling the food or the water. For its military use, a *dispersion by an aerosol is considered the most deadly*. The poison is, however, destroyed by alkalis, iodine, nascent chlorine and permanganate.

An expectant Scottish mother wants to have a *complete photographic (movie) record of her baby's delivery*. Some doctors, reading her intentions in a daily paper, became disgusted and outraged, and everyone hopes that hospital authorities will prevent the desecration of motherhood by such a "performance."

People are still paying *top sums for old medical classics*. At a recent auction at Sotheby's in London, when the library of the late Archibald Gilpin was sold, a first edition of the Anatomy of VESALIUS (1543) brought £1,800; the work of ADDISON on the Diseases of the Suprarenal Capsule (1855) went for £450; the work of AUENBRUGGER on Percussion (1761) was sold for £850. JENNER's book on Vaccination (1798) was purchased for £580. Incidentally this same copy in 1953 was purchased for £125. It seems to be a good investment to buy old medical and scientific firsts, and to sell them to the bibliomaniacs. —This item brings us to the end of the old year, and to Letter "Z" in our Third Series. In transition to a new alphabetical series and to Series IV we wish you all . . . *Merry Christmas and a Happy New Year!*

NOTES

Timely items of general interest are accepted for these columns. Deadline is 1st of month preceding month of issue.

Department of Defense

Ass't Secretary (Health & Medical)—HON. FRANK B. BERRY, M.D.
Deputy Ass't Sec'y—HON. EDW. H. CUSHING, M.D.

ARMED FORCES MEDICAL JOURNAL

The Department of Defense has decided to discontinue the publication of the *Armed Forces Medical Journal* with the December 1961 issue. This will round out eleven volumes for that well known journal in which many articles pertaining to medicine in the military services have been published.

With the discontinuance of that journal, MILITARY MEDICINE feels an additional obligation to the armed forces. Our journal, formerly known as *The Military Surgeon* until January 1955, has been published for over sixty years. During these years we have carried articles pertaining to the armed forces and the Public Health Service, and after the organization of the Veterans Bureau (later the Veterans Administration) news from that source has also been included in the official journal of the Association of Military Surgeons of the United States.

We intend to do everything possible to meet the obligation placed upon us because of the discontinuance of the *Armed Forces Medical Journal*. We hope our readers will give us their help by their constructive criticism. We are here with no selfish motives. In the spirit of service to you we hope to continue to become better acquainted.

AUTOPSY MANUAL

The Autopsy (TM 8-300, NAVMED P-5065, and AFM 160-19), an official guide on conducting an autopsy, is available for 50¢ per copy from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.

AFIP LECTURES

The Annual Armed Forces Institute Lectures will be held February 13-17, 1961 at the Armed Forces Institute of Pathology, Washington, D.C.

ORTHOPEDIC PATHOLOGY

A course in Orthopedic Pathology, designed to meet the requirements of the American Board of Orthopedic Surgery was conducted at the Armed Forces Institute of Pathology from October 31 through December 9.

Approximately 29 officers of the Army, Navy, and Air Force attended the course which was under the direction of Captain H. T. Stanford, Medical Corps, U. S. Navy, Orthodedic Pathology Section, of the Institute.

MEDICAL MUSEUM ACQUISITION

The Medical Museum of the Armed Forces Institute of Pathology, located in downtown Washington, was recently presented with an important handwritten journal rescued by Dr. Edward R. Squibb when his laboratory was on fire many years ago. Dr. Squibb, a former medical officer of the U. S. Navy, improved the method for the production of ether. But it was this ether that caused the fire and the destruction of his laboratory. Dr. Squibb was badly burned.

This manual along with many other articles of historical interest can be seen at the

(L to R) Rear Admiral Calvin B. Galloway, MC, USN, Assistant chief of the Navy's Bureau of Research and Medicine; Colonel Frank M. Townsend, USAF, MC, Director, Armed Forces Institute of Pathology; George S. Squibb, great-grandson, Director of Sales, E. R. Squibb Company.

Medical Museum which is open daily to the public.

NEW DEAN

Dr. Richard L. Meiling, former Director of the Medical Services of the Department of Defense, becomes Dean of Ohio State University College of Medicine, January 1, 1961.

He succeeds Dr. Charles Austin Doan who will become Dean Emeritus and will continue as professor and director of medical research in the department of medicine, faculty ranks he has long held. The change has become necessary because of Dr. Doan's reaching age 65, and the University rule requiring high administrative officers to step aside at that age.

Dr. Meiling was appointed by the Hoover Commission as medical advisor to its National Security Committee in 1948. Under Secretary of Defense Louis Johnson he became Director of Medical Services of the department. In 1951 he returned to Ohio State University where he was appointed associate dean, associate director of the Health Center, and associate professor of obstetrics and gynecology. He became professor of obstetrics and gynecology in 1953 and professor of aviation medicine in 1957.

Dr. Richard L. Meiling

Army

Surgeon General—Lt. Gen. Leonard D. Heaton

Deputy Surg. Gen.—Maj. Gen. Thomas J. Hartford

APPOINTMENT

Lt. Colonel Joseph D. Goldstein, MC, who most recently headed the Department of Atomic Casualty Studies at Walter Reed Army Institute of Research has been named Chief, Division of Nuclear Energy, U. S. Army Medical Service Research and Development Command. He is a Consultant to the Army Surgeon General on nuclear energy matters. He will continue to maintain operational control of the Department of Atomic Casualty Studies at the Walter Reed Army Medical Center.

AHA APPOINTMENT

Colonel James T. McGibony, MC, Director of Plans, Supply and Operations in the Office of the Surgeon General, has been appointed to a three-year term on the American Hospital Association's Council on Professional Practice.

ASSIGNMENTS

Major Hughie C. Thomas, MSC, has been assigned as Special Projects Officer for the U. S. Army Medical Research and Development Command, Office of the Surgeon General.

Captain Charles H. Ertell, Jr., MSC, has been assigned to the Technical Liaison Division, Office of the Surgeon General. He will be responsible for the Exhibits program of the Army Medical Service, and for liaison with educational and industrial programs with civilian agencies.

VETERINARIANS IN DEMAND

The Army needs more veterinarians and unless the need is met by volunteers there will have to be a resort to the Selective Service System method of supplying these officers. This announcement was made recently by Brigadier General Russell McNellis, Chief of the Army Veterinary Corps. Qualified veterinarians may apply for appointment as first lieutenants with concurrent active duty in the Army Veterinary Corps Reserve. Communications should be addressed to the Surgeon General of the Army, Attention: MEDCM-OP.

GLOBAL MEDICINE COURSE

Walter Reed Institute of Research was the location of a course on "Global Medicine" recently. Some of the diseases discussed were diphtheria, malaria, smallpox, schistomiasis, yellow fever, typhoid fever, typhus fever, Q fever, plague and cholera. All these are very important to military forces that may serve in any part of the world. Emphasis, of course, should always be placed on the prevention of such diseases. Money spent on prevention of disease is money well spent, and will mean man-days spent on duty rather than on the sick list.

BAMC NEWS

Captain Frank Cecarelli, MC, a resident in urology at Brooke General Hospital, received the unanimous vote of the judges at the American Urological Association annual meeting for first prize in the presentation of a paper by residents. His paper dealt with alteration of fluid and electrolyte balance in patients after prostatectomy.

Lieutenant Colonel Hugh L. Keegan, Instructor of Entomology in the Department of Preventive Medicine, Army Medical Service School, Brooke Army Medical Center, Fort Sam Houston, Texas, has recently revised his book *Some Venemous and Noxious Animals of the Far East.*

ASSIGNED FIRST ARMY HQ.

Colonel Frank J. Vita, MC, who has just returned from an assignment in Italy, has been named Chief of the Professional Services Division, First U. S. Army Medical Section. He succeeds Colonel Edward G. Sion, Deputy Surgeon now to the Surgeon, Colonel James Q. Simmons.

During World War II Colonel Vita served for four years with the Army Air Force in New Guinea. After the war he went into private practice in Cliffside Park, New Jersey. He was recalled to active duty in 1949, served in the Pentagon, and in 1950 was ordered to Korea. In 1951 he became Chief, Professional Services, Second Army, Fort George G. Meade, Md. Then he served in Paris, France, for three years, and in the United States with the 36th Evacuation Hospital.

Colonel Vita holds the Bronze Star Medal, and has been awarded the Medal of Honor of the French Health Service.

HONORED

Lt. Colonel Helen M. Davis, AMSC, former Chief of Hospital Dietitians, was awarded the Legion of Merit. Presentation was made at the American Dietetic Association Meeting held in Cleveland, Ohio, last October. She is now engaged in writing the dietitian section of the Army Medical Specialist Corps history being compiled at the U. S. Army Medical Service Historical Unit, Forest Glen, Md.

RETIRED

Colonel George F. Jeffcott, DC, who recently retired from the Army after more

than 25 years service in the Army Dental Corps, has taken up residence at 2675 S.W. Braemar Court, Portland, Oregon.

Colonel Jeffcott is the author of the "History of the U. S. Army Dental Service in World War II." He received the Legion of Merit for distinguished performance of duty particularly his contributions to the Army Dental Intern Program.

NEW ANTI-MALARIA PILL

A new anti-malaria pill which promises to be the most effective anti-malarial drug combination developed so far, soon will be given to the U. S. troops in Korea.

Resulting from Army supported studies conducted by Dr. Alf S. Alving of the University of Chicago, the new tablet combines two drugs used separately in the past for malaria prevention—chloroquine and primaquine, both developed since World War II. The new treatment will be the administration of one tablet of the new preparation once a week. Remember the days of quinine and atabrine?!

Navy

Surgeon General—REAR ADM. BARTHOLOMEW W. HOGAN

Deputy Surgeon General—REAR ADM. EDWARD C. KENNEY

HONORED

Rear Admiral Charles W. Letcher, MC, USNR, of Miami, Oklahoma, is the new president of the American Board of Bio-Analysts, national organization of scientists in 14 biological science specialties pertinent to bioanalysis. He succeeds Dr. M. L. Chuker, Tucson, Arizona.

Dr. Letcher served as flight surgeon abroad Aircraft Carriers USS *Wolverine*, USS *Sable*, USS *Manila Bay*, and USS *Ranger*. He was wounded at Lingayen Gulf and awarded the Purple Heart. He did considerable research in Navy pilot fatigue. Currently his chief areas of interest are anesthesia and forensic medicine.

NOMINATION TO DRC

Captain W. R. Stanmeyer, DC, USN, Bureau of Medicine and Surgery, was recently nominated to serve as Navy Liaison Officer on the National Advisory Dental Research Council. He is Head of the Professional Branch, Dental Division, and Head, Medicine and Dentistry, Office of Naval Research.

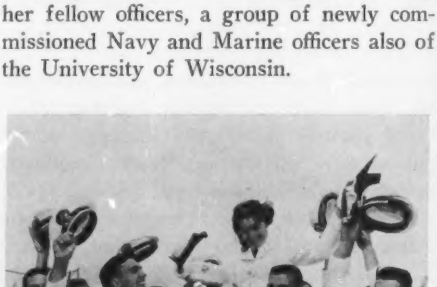
CHIEF, ORAL PATHOLOGY

Captain Louis S. Hansen, DC, USN, has been appointed Chief of the Dental and Oral Pathology Division at the Armed Forces Institute of Pathology. He succeeded Major General Joseph L. Bernier, DC, USA, now Assistant Surgeon General for Dentistry, Department of the Army.

FIRST GRADUATE

The first University of Wisconsin coed to receive a commission in the Navy after having participated in the Navy Nurse Corps Candidate Program as a senior nursing student is Ensign Gay W. Rost, NC, USNR, from Cedarburg, Wis.

The picture shows her being held aloft by her fellow officers, a group of newly commissioned Navy and Marine officers also of the University of Wisconsin.



ENSIGN GAY W. ROST, NC, USNR, and her Fellow graduates.

NEW EXTENSION COURSES

Operative Dentistry (NAVPERS 10759) and *Dental Department Administration*

(NAVPERS 10736-A) are now available to dental officers of the U. S. Navy and Naval Reserve. Application for these courses should be made through channels to the Commanding Officer, U. S. Naval Dental School, National Naval Medical Center, Bethesda 14, Md.

RETIRED

Dental Corps Officers recently retired are: Captains James A. English, John P. Jarabak, and John E. Krieger.

Medical Service Corps Officers who have retired are: Commander Russell S. Nance; Lieutenant Commanders Ray W. Conrad, Thomas A. Devins, Earl F. Hickey, Milton E. Koepke, Waters T. Meriwether, John Papi, Chester D. Worthen, Earl G. Zellman, and Fred A. Zuelzke.

Official U. S. Air Force Photo

BRIG. GEN. MAURICE HARLAN, USAF, DC.

Air Force

Surgeon General—MAJ. GEN. OLIVER K. NIESS

Deputy Surg. Gen.—MAJ. GEN. JOHN K. CULLEN

DENTAL CHIEF

Brigadier General Maurice C. Harlan, USAF, DC, recently succeeded Major General James S. Cathroe as Assistant Surgeon General for Dental Services of the U. S. Air Force. General Cathroe retired.

General Harlan, a native of Kansas, attended schools in Des Moines, Knoxville and Grinnell, Iowa, and received his dental degree from the State University of Iowa. He entered military service in 1936 with the Army, and in 1949 transferred to the Air Force. In June 1959, General Harlan became Deputy Assistant Surgeon General for Dental Services, Office of the Surgeon General.

RECEIVES LEGION OF MERIT

Major General James S. Cathroe, former Assistant Surgeon General for Dental Services, U. S. Air Force, was awarded the Legion of Merit on his retirement from the Air Force. Presentation was made by the Deputy Surgeon General, John C. Cullen. The Cathroes reside at 5707 Bent Branch Road, Washington, D.C.

HONORED

Captain Carl G. Peterson, Jr., USAF, MC, Chief, Urological Services, 823rd Medical Group (SAC), Homestead Air Force

U. S. Air Force Photo

MAJOR GENERAL JOHN C. CULLEN, Deputy Surgeon General, USAF, *(right)* congratulates MAJOR GENERAL JAMES S. CATHROE.

Base, Florida, was the winner of the Joseph F. McCarthy Research Award in a ceremony at the annual meeting of the Western Section, American Urological Association, held in Vancouver, B.C. The award was given for an essay summarizing two and one half years of personal research in cancer of the prostate. The essay will be published in *The Journal of Urology.*

TECHNICAL REPORT

Food for Space Travel (ARDC Tech. Report No. 60-8) is a 64-page book, now available to the public. It can be obtained through the Office of Technical Services, U. S. Dep't., of Commerce, Washington 25, D.C.

Authors of this book are: Colonel Albert A. Taylor, USAF, VC; Beatrice Finkelstein, M.S.; and Robert E. Hayes, Ph.D.

Public Health Service

Surgeon General—LEROY E. BURNEY, M.D.
Deputy Surg. Gen.—JOHN D. PORTERFIELD, M.D.

NEW POSITIONS

Three newly created Public Health Service positions were effective November 1.

Dr. James M. Hundley became fourth in command in the Public Health Service. He holds the rank of an Assistant Surgeon General and serves under Assistant Surgeon General Arnold B. Kurlander with specific responsibilities in the areas of field relationships with the Regional Medical Directors, of Health Mobilization, and of International Health.

Mr. Harry Hanson became the Associate Chief of the Bureau of State Services, with the rank of Assistant Surgeon General. His duties will be in the area of environmental health activities. He will retain temporarily his present post as Director of the Sanitary Engineering Center in Cincinnati.

Dr. Aaron W. Christensen is the second Associate Chief in the Bureau of State Services, with rank of Assistant Surgeon General. He will be concerned with community health services.

ORAL DISEASE REPORT

Public Health Service Publication No. 760, giving the 1959 Highlights of Progress in Research on *Oral Disease,* a booklet of 22 pages has just recently been published. Single copies can be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C., for 15¢.

We read that the most prevalent of the conditions of the mouth are dental caries, periodontal disease, bacterial and viral infections, and congenital anomalies.

Using germ-free animals it has been established that bacteria are not necessary to the formation of tartar which is associated with the onset of periodontal disease.

Periodontal disease associated with the middle and older age groups may surpass dental caries in the loss of teeth in the United States.

Dibasic calcium phosphate is being studied in the control of dental caries. Also being studied is the protective coating for teeth. The value of fluoridation of water is again pointed out for the prevention of caries.

Interesting is the statement, "It is a generally accepted clinical impression that during high periods of tension the gastric secretions may change the chemical equilibrium of the mouth and contribute to the alteration of pH and viscosity of the saliva, thus rendering the teeth more susceptible to caries and contributing to a change in the gingival tissue.

LIBRARY OF MEDICINE

Mr. Scott Adams, became Deputy Director of the National Library of Medicine on September 19. The Director of the library is Dr. Frank B. Rogers.

Mr. Adams will be responsible for the development and operation of extramural grant programs in support of activities in the field of medical communications and medical librarianship.

Veterans Administration

Chief Medical Director—WILLIAM S. MIDDLETON, M.D.
Deputy Chief Med. Dir.—H. MARTIN ENGLE, M.D.

APPOINTMENT

Joe Meyer, Ph.D., has been appointed as Chief of the Medical Research Laboratories Division of the Veterans Administration, Department of Medicine and Surgery, Washington. He succeeds Harold F. Weiler who left the Veterans Administration to accept a position with the Army Research Office.

PACEMAKER FOR HEART

A small electronic device which is implanted under the skin and which will act as a pacemaker for the heart in cases of heart block has been successfully used at the Veterans Administration Hospital in Buffalo.

The device is the result of joint effort between Wilson Greatbatch, M.S., formerly associate professor of electrical engineering at the University of Buffalo, William M. Chardack, M.D., chief of surgery at the Veterans Administration Hospital and Andrew A. Gage, M.D., staff surgeon at the hospital.

The estimated lifetime of the device is five years. It is about the size of a pocket watch. Replacement can be made under local anesthesia without disturbing the electrode on the heart. Six patients have thus far been treated by this implantation.

MULTIPLE SCLEROSIS

Dr. E. D. Acheson and Dr. C. A. Bachrach of the Veterans Administration recently made a report in the *American Journal of Hygiene* (July issue) which incriminates the climate as a factor in multiple sclerosis.

In their study of 1782 records of veterans with multiple sclerosis they found that the disease occurred more frequently in those veterans that were from the northern areas of the United States. This was true for the Negro patients as well as for the white patients.

These doctors say, "The data does not support the hypothesis that the disease results from infection or from presence or absence of a trace element in soil or water."

WRITE LETTERS

Long term patients in Veterans Administration Hospitals need to keep in contact with their relatives. This is good therapy from the standpoint of the staff of the hospitals in which these veterans are taken care of. However, it seems that the longer the veteran is in the hospital the fewer letters he receives from his relatives. Here is something the people can do—keep in contact.

Miscellaneous

TEACHING POSITION DESIRED

A highly qualified surgeon with special teaching capabilities wishes to make contacts for positions open in the spring of 1961. Contact may be made by letters addressed to PMM—Association of Military Surgeons, Suite 718, 1726 Eye St., Washington 6, D.C.

PHYSICIANS FOR HOSPITAL EMERGENCY ROOM

A 250-bed hospital in Florida is interested in employing several retired medical officers, each on a part time basis, in order to provide full time coverage in emergency room. Contact can be made by letters addressed to FMM—Association of Military Surgeons, Suite 718, 1726 Eye St., Washington 6, D.C.

RESEARCH ON CLEFT PALATE

The Public Health Service has granted three annual awards of $104,650 each to New York University College of Dentistry for research on cleft palate and cleft lip.

Dr. Sidney I. Silverman, director of postgraduate and graduate prosthodontics at the College will direct and coordinate the program which involves research in three major areas: the basic biologic sciences, the behavioral sciences, and the clinical sciences.

COUNTERFEIT DRUGS

The Food and Drug Administration has been warning the druggists to be on the lookout for counterfeit drugs. This has apparently become quite a practice in the country. The Food and Drug Administration should be notified immediately when such drugs are offered for sale.

BLOOD VOLUME MEASUREMENT

Drs. John A. Williams and Jacob Fine of Beth Israel Hospital and Harvard Medical School have reported on a new method for measuring the blood volume. This was made known to the American College of Surgeons recently.

In 15 minutes a determination can be made by this method which uses radio-active iodine.

PROJECT HOPE

The SS *Hope* is now in Southeast Asia and is rotating its first group of volunteers. As will be recalled this ship sailed from San Francisco in September for Indonesia with the express purpose of sharing this country's modern medical knowledge with Southeast Asia.

Many pharmaceutical companies gave supplies to this worthy project. By the way HOPE means HEALTH OPPORTUNITY FOR PEOPLE EVERYWHERE.

Anyone wishing to know more of this project or who wishes to make a contribution should direct his letter to 1818 M Street, N.W., Washington 6, D.C.

POSTGRADUATE COURSE

Recent Advances in Drug Therapy will be offered as a postgraduate course by the American College of Physicians, January 9-13, 1961 at the University of Washington School of Medicine, Seattle. Further information can be obtained from the headquarters at 4200 Pine St., Philadelphia 4, Pa.

MEETING

The American College of Surgeons will hold a four-day Sectional Meeting in Philadelphia, March 6 through 9, 1961. This will be for surgeons and nurses. Headquarters will be the Bellevue Stratford, Ben Franklin, and Sylvania Hotels.

Preliminary programs are now being circulated from the headquarters at 40 East Erie Street, Chicago 11, Ill.

COMMON COLD DRUG

Is there a drug for the common cold? British chemists think they have found one after eight years of research. We hope they have found it in *Virugon.*

Much research has been done on the common cold and out of this research there have been new discoveries but the common cold has been a baffling disease. We hope that the British have found something to combat it.

SUPER-PENICILLIN

The British also claim that they have developed a super-penicillin which will attack the problem of staphylococcal infections in hospitals. Mass production of this antibiotic is scheduled for 1961.

DENTAL TROUBLE

Tooth decay is the commonest disease in America, afflicting 95% of the population. It is estimated that 30% of all U. S. children even now require orthodontic treatment, and that the present crop of youngsters will have lost half their teeth by the time they are 40!!

Oral Hygiene

HOPE

I know the world is filled with trouble and many injustices. But reality is as beautiful as it is ugly. I think it is just as important to sing about beautiful mornings as it is to talk about slums. I just could not write anything without hope in it.

The late Oscar Hammerstein II

EXERCISE

Nowadays they spend $10,000 for a school bus to pick the kids right up at the door so they don't have to walk. Then they spend $100,000 for a gym so they can get some exercise.

Red Blanchard, *Wallace's Farmer & Iowa Homestead.*

New Members

Capt. Jose A. Carrasquel Rodriquez, VAMC
Maj. Rogelio Mora Marquez, VAMC
Capt. James F. Cramer, USAF, DC
Lt. James H. Erickson, MC, USNR
Anthony W. Frisbie, MD
Pharm. John F. Taylor, VA
Helen L. Amundsen, RN
Maj. Eva Y. Gladue, ANC, Ret.
Lt. Josephine Grant, NC, USNR
Lt. Col. Abraham S. Lavine
Ens. Patricia J. Whalen, NC, USNR
Lt. jg Martha A. Zaleski, NC, USNR-R
Lt. Col. David Kubryk RCAMC
Maj. M. S. Verplank, VC, USAF
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LCdr. Georgia A. Dover, NC, USNR
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Melina LeDuc, RN
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William H. Evans, MD
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LCdr. Ann Prendergrast, NC, USN
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Maj. Gen. J. W. Schwartz, MC, USA
Capt. Joseph A. Syslo, MC, USN
LCdr. Louise Bareford, NC, USN
Lt. Amelia M. DalMaso, NC, USN
Catherine A. Oliverio, RN
Annie R. King, RN
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Lt. jg Ethlyn L. Bennett, NC, USNR
William Dworkin, VA
Lt. Col. S. C. Hall, NC, USAF
Capt. William J. Mitchell, MC, USAF
Maj. Clyde M. Reagan, VC, USA
Capt. Robert Schermer, DC, AUS
Maj. M. Michael Sigel, MSC, USAR
Miss Jessie E. Silver
Mr. Paul A. Waylonis, VA
Mildred M. Wiese, VA
Lt. Wanda S. Orr, NC, USN
Dr. E. J. Olson, VA
Lt. Arnold R. Westerbert, Royal Canadian Navy
Capt. Dennis W. Brosnan III, MC, USA
LCdr. Elsie A. Cook, NC, USNR
Maj. Edward L. J. Krieg, MC, USAR
Surgeon Richard Otto Schulte, USPHS
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Ruth C. Frothingham, RN
Cdr. Dorothy M. Gale, NC, USN
Lt. T. Y. Chiao, Chinese Air Force
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LCdr. Hilda W. Lane, NC, USNR-R
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Capt. Albin A. Galuszka, MC, USN

Deaths

BORNSTEIN, Joseph H., Colonel, Medical Corps, U. S. Army, died over the week end of October 30 in his sleep. He had not reported to his office at Second Army Headquarters and search was made at his apartment. Age was 47.

Dr. Bornstein was a graduate of the Boston University School of Medicine, 1938. He served in five European campaigns in World War II and in the Korean Conflict. He had served at Walter Reed General Hospital and in the Office of the Surgeon General of the Army. At the time of his death he was Chief of the Operations Division of the Office of the Second Army Surgeon, Fort Meade, Md.

He is survived by his mother, three brothers and a sister. Interment was in Chelsea, Mass.

DUGAN, Helen A., Lieutenant Colonel, Army Nurse Corps, Retired, died at Walter Reed General Hospital, October 17, at the age of 67.

GOODPASTURE, Ernest W., M.D., former Scientific Director of the Armed Forces Institute of Pathology from 1955 until 1959, died of a heart attack in Nashville, Tennessee, 20 September.

Dr. Goodpasture was an internationally recognized pathologist and developed a vaccine for mumps, and his research led to the mass production of vaccines against yellow fever, influenza, and typhus fever.

GROW, Malcom C., Major General, Medical Corps, U. S. Air Force, retired, the first Surgeon General of the Air Force, died October 20 at Andrews Air Force Base Hospital, Washington, D.C., following a long illness. His age was 72.

General Grow was born in Philadelphia and was a graduate of the Jefferson Medical College. He entered on active military duty in 1918 and served as surgeon of the 45th Artillery and the 42nd Infantry Division in France. He became surgeon of the 8th Air Force, and later of the U. S. Strategic Air Forces in the European Theater in World

War II. In July 1949 when the Air Force became a separate department General Grow became its first Surgeon General. He was retired from active duty in November 1949.

He was a Fellow of the Royal Society of Medicine (British); certified by the American Board of Preventive Medicine and Public Health and an Honorary Fellow of the American College of Surgeons.

He was awarded many American and foreign decorations. Interment was in Arlington National Cemetery.

KNIGHT, Della V., Lieutenant (junior grade), Nurse Corps, U. S. Navy, one of the original 20 nurses who comprised the Navy Nurse Corps upon its establishment in 1908, died at the U. S. Naval Hospital, Oakland, California, September 17, 1960, at the age of 82.

Lieutenant Knight had served with the Army Nurse Corps from 1904 to 1907. She served with the Navy Nurse Corps for more than 22 years, retiring from active duty in October 1930.

O'BRIEN, Elizabeth, Commander, Nurse Corps, U.S. Navy, Retired, died at the U.S. Naval Hospital, Philadelphia, Pa., September 24, at the age of 56.

Commander O'Brien entered on active duty in 1942. She had served at various Naval Hospitals and on her retirement was Nursing Supervisor at the U. S. Naval Hospital, Philadelphia. Interment was in Arlington National Cemetery.

Life Members

of the

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of the

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Brig. Gen. Harold C. Lueth, MC, USAR
Maj. Gen. George F. Lull, USA, Ret.
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Med. Dir. Knox E. Miller, USPHS
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NEW BOOKS

Books May Be Ordered Through The Association

Medical and Biological Research in Israel, Edited by Moshe Prywes. 62 contributors. Obtainable through Grune & Stratton, Inc., New York. Price $8.00.

The Management of Fractures and Soft Tissue Injuries, By the Committee on Trauma, American College of Surgeons. Based on An Outline of the Treatment of Fractures, 7th Ed. and Early Care of Acute Soft Tissue Injuries, 2nd Ed. (Available at $1.75 and $2.25, respectively, in separate books.) W. B. Saunders Company, Philadelphia, London. Price $5.00.

Atlas of Clinical Hematology, By Katsuji Kato, Ph.D., M.D. Grune & Stratton, New York and London. Price $25.00.

Fundamentals of Chest Roentgenology, By Benjamin Felson, M.D. W. B. Saunders Company, Philadelphia and London. Price $10.00.

Chemotherapy in Emotional Disorders, The psychotherapeutic Use of Somatic Treatments. By Frederic F. Flach, M.D., F.A.P.A., and Peter F. Regan, III, M.D., F.A.P.A. McGraw-Hill Book Company, Inc., New York, Toronto, London. Price $10.00.

Pseudomonas Aeruginosa Infections, By Claude E. Forkner, Jr., M.D. Grune & Stratton, New York and London. Price $5.25.

A Practice of General Anaesthesia for Neurosurgery, By Robert I. W. Ballantine, M.R.C.S., L.R.C.P., D.A., F.F.A.R.C.S., with collaboration of Ian Jackson, M.R.C.S., L.R.C.P., D.A. Little, Brown and Company, Boston. Price $6.50.

Clinical Orthopaedics, No. 17, Clinical Physiology and Pathology of Bone. J. B. Lippincott Company, Philadelphia and Montreal. Price $7.50.

Congenital Malformations, Ciba Foundation Symposium. Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P.; and Cecilia M. O'Connor, B. Sc. Little, Brown and Company, Boston. Price $9.00.

Human Pituitary Hormones, Ciba Foundation Colloquia on Endocrinology. Vol. XIII. Edited by G. E. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Cecilia M. O'Connor, B. Sc. Little, Brown and Company, Boston. Price $9.50.

Progress in Experimental Tumor Research, Edited by F. Homburger, M.D., 18 contributors. J. B. Lippincott Company, Philadelphia and Montreal. Price $22.00.

Adventure to Motherhood. Picture Story of Pregnancy and Childbirth. By J. Allan Offen, M.D. Taplinger Publishing Co., Inc., New York. Price $2.95.

Care of the Well Baby, Medical Management of the Child from Birth to Two Years of Age. By Kenneth S. Shepard, M.D., 9 contributors. Foreword by Wilburt C. Davison, M.D., D.Sc., LL.D. J. B. Lippincott Company, Philadelphia and Montreal. Price $3.25.

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BOOK REVIEWS

VISION OF THE AGING PATIENT. An Optometric Symposium. Edited by Monroe J. Hirsch and Ralph E. Wick. 15 contributors. 328 pp. Chilton Company, Philadelphia and New York. Price $7.50.

The names of the various chapter writers are: Archer, Bartley, Eakin, Ellerbrock, Hofstetter, Koetting, Mazow, Morgan, Neill, Rosenbloom, Shlaifer, Weimer, and Weymouth.

The book deals with the physiological and anatomical changes with age, psychological aspects of aging, refractive state and visual acuity in age, the anomalies of accommodation and the neuromuscular system, the pathology of the eye in age, the partially sighted older patient, the bedfast or invalided patient, the governmental and private assistance programs for the aged or blind, and management of the aging patient in practice.

This book is actually an optometric symposium written by optometrists for optometrists. It is somewhat abridged in chapters dealing with the physiological and anatomical changes with age and pathology of the eye in age. The chapters that are the best written ones are those that have to do with adjustment of the spectacles for the aged and governmental and private assistance programs for the aged or blind. The chapter on anomalies of accommodation and the neuromuscular system is written in simple style. The chapter on refractive state and visual acuity in age is discussed in textbook style. The chapter that should be mentioned especially is the one dealing with the social and vocational rehabilitation of the blind and partially sighted older patient. This chapter written by Alfred A. Rosenbloom, Jr. is an especially good one. The bibliography is very good and is another feature that will be helpful to the reader who wishes to go beyond the information given in this well written textbook of visual geriatrics.

COL. ROLAND I. PRITIKIN, MC, USAR

INJURIES OF THE BRAIN AND SPINAL CORD AND THEIR COVERINGS. Edited by Samuel Brock, M.D., 31 contributors. 739 pp., illust. Springer Publishing Co., Inc. New York. Price $18.50.

This, the fourth edition of a well established book, shows extensive revision and updating of material, covering in details the subjects of etiology, diagnosis, treatment, pathology, and end results of brain and cord injury. Thirty-one distinguished contributors have produced a book noteworthy for its clarity and conciseness, practical usefulness, and for the fact that there is so little overlap of statements.

The importance of trauma to the central nervous system has rapidly increased in the past two decades, so that the subject is properly kept fresh in the minds of all in the medical field who must be concerned with it. The present edition of this book no longer contains material on the medico-legal aspects of injury, but there are entirely new chapters on the treatment of post-traumatic meningitis, bladder pathology, and some special problems of the paraplegic patient. There is extensive discussion of the subject of mental change which may or not be related to trauma, as well as the social implications of the results of such trauma. There is much excellent material on intracranial hemorrhage in its various forms as well as on the diagnosis, pathology and treatment of neuroses directly the result of the trauma. This reviewer is struck by the fact that each clinical entity is depicted by a "style" which seems to pervade the book: the reader can "see" the injured patient, the tissue changes, and the clinical residuals almost as if he were making slow, detailed ward rounds. It is altogether a rich and fact-filled book, somewhat didactic, but never arbitrary. References to the literature are extensive and up-to-date. It contains relatively few illustrations.

JOHN MARTIN, M.D.

HANDBOOK OF NEUROLOGICAL DIAGNOSTIC METHODS. Edited by Fletcher McDowell, M.D., and Harold G. Wolff, M.D. 201 pp., Illustrated. The Williams & Wilkins Company, Baltimore. Price $4.50.

After perusing this manual one should obtain essential knowledge of the neurologic examination and ancillary diagnostic procedures pertaining thereto. The manner of presentation, with its careful elucidation of basic material, indicates that it is directed primarily towards the medical student. There are concise discussions of skull x-rays, pneumoencephalography, arteriography, myelography, etc. Typically, a short chapter on spinal puncture points out pertinent features—including the inadvisability of performing lumbar punctures on weekends if the situation permits otherwise.

In the latter part are brief but well-handled sections on diagnosis and management of neurological emergencies; such as coma, delerium, acute head

injury and status epilepticus. The manual is concluded by a list of questions germaine to the nervous system; those interested in obtaining a present day working knowledge of neurology might do well to read these questions and answer them. Medical students, interns and physicians who need to review some fundamentals of neurology, with particular emphasis on the examination and its various methodologic counterparts, may wish to acquire this modestly priced book.

LT. COL. ARTHUR J. LEVENS, MC, USA

AN ATLAS OF NEUROSURGICAL TECHNIQUES, by James L. Poppen, M.D., 522 pages, illustrated. W. B. Saunders Company, Philadelphia. Price $28.00.

For some years there has been a great need for a good exposition of the various operative techniques of neurosurgery. Dr. Poppen is a master of techniques, and he has compiled within this volume the majority of the procedures used in the practice of neurosurgery.

The format of the book features illustrations of the steps of the operative procedure arranged in chronological order. On the facing page are terse descriptions of the illustrations. This results in an attractive presentation which is easily read and readily accessible for reference.

The text appears to be intended primarily for the neurosurgical resident. Unfortunately, there is no discussion of the indications for the operative procedures. Occasionally, important considerations are omitted and steps suggested which, in the hands of an inexperienced operator, could lead to undesirable results. The author's laudable economy of description is thus a double-edged sword.

The illustrations are generally good. They are the work of several artists. Some of the drawings are ambiguous in content, and a number contain gross anatomical errors. The section on intracranial aneurysms is particularly undesirable in this respect. Some of the illustrations are too diagramatic to be of real help to the surgeon at the operating table.

Sections devoted to the treatment of facial pain, surgery of the sympathetic nervous system, and malignant exophthalmos are well described and illustrated.

The problem of open wounds of the head is ignored.

The book is an attractive presentation of many of the operative techniques commonly used in neurosurgery. When used with caution, it will prove of value to the neurosurgical resident.

LT. COL. G. J. HAYES, MC, USA

OFFICE DIAGNOSIS. By Paul Williamson, M.D. 470 pp., illus. W. B. Saunders Company, Philadelphia and London. Price $12.50.

This is a clearly written, highly readable, important text compiled by a general practitioner of medicine in Texas. It is unusual in that no reference list is appended, since the author has collected his personal practical experiences in office diagnosis. He has learned effective diagnosis through many years of contact with patients and by his close associations with other doctors in practice as well as the teaching fields.

The book is well organized into twelve chapters with headings including: Nonspecific Symptoms, Dermatologic Symptoms, Cardiac Symptoms, Digestive Tract Symptoms, et cetera. Dr. Williamson presents the finer aspects of the art of medicine combined with sound scientific clinical data:

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Office Diagnosis is recommended for all general practitioners of medicine because it points the way to an objective diagnosis as a basis for proper therapy. Superficial symptomatic treatment is not condoned as a rule.

COL. U. ROBERT MERIKANGAS, USA, RET.

BEDSIDE DIAGNOSIS. 5th Ed. By Charles Seward, M.D., F.R.C.P. 479 pp. The Williams & Wilkins Co., Baltimore, exclusive U. S. agents.

The size and format of this volume adapts itself readily to its general intent of quick reference to the student for evaluation of frequently occurring symptoms and signs.

Of particular value were the chapters on Pain, with the accompanying figures on nerve distribution which were clear and accurate. Each chapter was preceded by a "Synopsis of Causes," which was felt to be extremely valuable in accomplishing its purpose of quick reference. Because of its briefness, various causes related to symptoms described were incomplete, but generally the purpose of directing the student or practitioner to common causes of symptoms was achieved.

Included, and with reason, was a chapter on "Drugs Considered As Causes of Symptoms," which consisted of seven pages. It was felt that since so frequently drugs are the causes of disease, a more complete treatment of the subject should have been undertaken.

A short chapter on "Some Uses of Radioactive Isotopes in Diagnosis" was included, and seemed out of place in a volume intended for the student or practitioner in a situation away from his more exotic equipment.

The chapter on "Normal Values" was well done, with the frequently-needed results of laboratory procedures clearly and well tabulated.

The book is of value mainly to the medical student, intern or general practitioner. It is well organized, well presented, and its size makes it particularly useful on the book shelf or in the pocket;

its readability is generally excellent, and its format practical and brief. It would seem that a volume of this sort might benefit from correlation and reference to other more extensive works, where the interested individual might search for additional needed information.

JOSE L. SILVA, M.D.

NINE MONTHS TO GO. By Robert McNair Mitchell and Ted Klein. 224 pp. J. B. Lippincott Co., Philadelphia. Price $3.95.

This book contains advice for expectant mothers and expectant fathers. There are 24 chapters. Here are the most frequently asked questions with their answers. This is a course in Mother and Baby Care.

REB

PATHOGENESIS AND TREATMENT OF OCCLUSIVE ARTERIAL DISEASE. Proceedings of a Conference held in London, 1959. Edited by Lawson McDonald. 237 pp., illustrated. J. B. Lippincott Company, Philadelphia and Montreal. Price $5.00.

This book gives the proceedings of a Conference held in London at the Royal College of Physicians, 13-14 November 1959. Renowned pathologists, surgeons, and cardiologists of the London, Oxford, and Edinburgh schools contributed to this conference. The studies were well conceived and carried through, the technics up-to-date and beautifully described, the conclusions were warranted and conservative. It is an excellent review of the present status of this problem.

Under *pathogenesis,* G. J. Popjak of London discussed the possibility of employing farnesoic acid and its analogues (including Merck 29) in the interruption of cholesterol synthesis at the farnesyl-squalene level.

Some of the statements regarding *cerebro-vascular disease* are: (1) angiography is the most valuable single study to localize the occlusion; (2) surgery for primary intracerebral hemorrhage is not too successful; (3) in carotid artery stenosis about half the cases have a cervical systolic murmur; (4) anticoagulation is not indicated in stroke.

Regarding *coronary artery disease,* conclusions are: (1) the only proven dieto-therapy to date is under-nutrition plus low animal fat; (2) lipid levels are lower and fluctuate with the level of estrogen secretion.

There is restatement of the almost forgotten fact that pedal pulses increase after exercise in the normal, but decrease in occlusive disease. The specific effects of sympathectomy are debated, however, there was agreement in denying any effect on intermittent claudication.

This is an excellent review of the present status of the problem.

LT. COL. R. B. FRANKLIN, MC, USA

MANUAL OF HISTOLOGIC AND SPECIAL STAINING TECHNICS. 2nd Ed. Armed Forces Institute of Pathology, Washington. 207 pp., four plates, three in color. McGraw Hill Book Co., Inc. New York. Price $5.50.

The few revisions and additions which differentiate this edition from the first one published in 1957 include a black and white and a color plate change, instructions for mounting microscopic sections on both plastic film and 35 mm film for more compact filing, Hart's elastic stain, the acid orcein-Giemsa stain and the Gridley stain for E. Histolytica in tissue sections. Otherwise, the format has been maintained.

A vastly improved assemblage of the manual offers an attractive, durable cover and a sturdy spiral binding.

This manual remains basically the one prepared in preliminary fashion by Mary Francis Gridley before her untimely death at the close of 1954. The paucity of revision needed at this time is a tribute to the excellence of her original compilation made while she headed the Histopathology Laboratory at the Armed Forces Institute of Pathology.

No peer to this second edition is to be found. Its coverage of tissue preparation and processing, preparation of sections, and basic and special staining technics make it the most valuable histopathology bench reference available today. The methods recorded have been in use for many years at the AFIP and, therefore, they can be considered "time-tested." Instructions for each process or staining procedure are clear and complete; adaptability of technics to general hospital laboratory use has been aided by modifications developed by the AFIP technical staff.

ROBERT F. DILLON, M.D.

SEA WITHIN. The Story of Our Body Fluid. By William D. Snively, Jr., M.D. 150 pp., 55 figs. J. B. Lippincott Company, Philadelphia and Montreal. Price $3.95.

The sea was the mother of animal life and Dr. Snively describes how man's body fluids show their kinship with it. He gives a simple and clear account of the physics and chemistry of fluid balances in the body; the interplay of the electrolytes; and the importance of the cell as the fundamental anatomic and physiologic unit. He does this in language that can be understood by the intelligent layman as well as by the reader from the medical and allied professions such as pharmacy, dentistry, and nursing. For the physician it is a valuable elementary textbook, or introduction to this field of physiology and clinical medicine, for the non-medical reader it presents a fascinating story in a relatively unknown area of sciences. The part played by the cell, the kidney, the ductless glands, and the maintenance of the acid and alkali balance are examples of a few of the subjects covered by the author.

The little book is illustrated by simple line drawings that really assist in comprehension of the subject and often show amusing touches of humor. An excellent little book in all respects.

CAPT. LOUIS H. RODDIS, MC, USN, RET.

THE HUMAN BLOOD PROTEINS. Methods of Examination and their Clinical and Practical Significance. By Prof. Ferdinand Wuhrmann, M.D., and Charlie Wunderly, Ph.D. Translated by Harvey T. Adelson, M.D. 491 pp., 179 figs. Grune & Stratton, New York and London. Price $15.75.

This encyclopedic work originating in Zurich has been through three German editions. This translation contains a few references as late as 1959, although the third edition from which it was taken appeared in 1956. Evidently there has been some updating in the translation. Despite the title, the book is concerned only with plasma proteins; it does not cover hemoglobin or other blood cell proteins. Otherwise the title is accurate: the first part of the book describes the proteins and methods for their study, the last part describes the clinical problems created by protein abnormalities. The book is a valuable reference.

COL. WM. H. CROSBY, MS, USA

PRACTICAL CLINICAL MANAGEMENT OF ELECTROLYTE DISORDERS. By William J. Grace, M.D. 132 pp. Appleton-Century-Crofts, Inc., New York. Price $4.95.

This is an excellent practical discussion of the various alterations that occur in electrolyte balance in several clinical conditions. Electrolyte changes that prevail in alkalosis, acidosis, cardiac failure, renal disease, diabetes, over digitalization, magnesium depletion, hyper and hypokalemia, hyperventilation and aldosteronism are well described. Convincing step by step illustrations of the development of these changes and their corrections are clearly illustrated.

It would have been more logical in this reviewer's opinion to have Chapter 7, which gives the fundamentals of electrolyte alterations and their effects on acid-base balance, as the introductory chapter. This reviewer would not agree with the statement that 50 units of insulin per hour is all that a patient in a diabetic coma can handle, and that it represents an optimal maximum dose. Insulin antagonists and binding substances are immeasurable factors in such situations.

The author had succeeded very well in his attempts to produce a readily understandable and practical text. It is recommended to all medical officers who find electrolyte inbalance problems real complexities and seek enlightment of them.

JULIAN LOVE, M.D.

DIABETIC CARE IN PICTURES. 3rd Ed. Simplified Statements with Illustrations Prepared for the Use of the Patient. By Helen Rosenthal, B.S., and Joseph Rosenthal, M.D. 237 pp., 125 illust. J. B. Lippincott Company, Philadelphia and Montreal. Price $4.50.

The third edition of this well illustrated, compact textbook for diabetic patients has again lived up to the reputation of previous editions.

The easy readability supplemented by effective and practical visual presentation of this book should contribute greatly toward helping the patient who has diabetes adjust to his disease and to help him lead a relatively normal life.

The contents of the book are up to date in terms of oral medications and the use of exchange lists in a more liberal dietary management of the patient with uncomplicated diabetes and in planning modified diets required by the patient with other conditions. The busy physician will welcome this book as a source of reference for his patients in reinforcing his prescribed therapy; members of the allied medical professions will find it of great value in teaching patients, adults and children. For better understanding of this prevalent disease by lay people, this book is recommended for any public library; hospital libraries should have it readily available for their readers.

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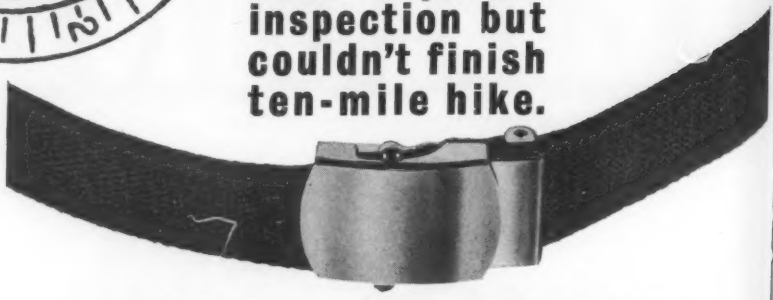

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New ESIDRIX-K provides all the oral diuretic-antihypertensive advantages of ESIDRIX, plus a generous potassium supplement. ESIDRIX produces marked excretion of salt and water in edematous patients, and in many hypertensive patients significantly reduces blood pressure, alone or with other antihypertensive drugs. Potassium excretion is minimal, and the built-in K supplement further helps eliminate problems due to potassium loss. Three ESIDRIX-K tablets provide potassium equivalent to one quart of fresh orange juice; ESIDRIX-K is coated to prevent gastric irritation.

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Supplied: Esidrix-K Tablets (white, coated), each containing 25 mg. Esidrix and 500 mg. potassium chloride. Esidrix Tablets, 25 mg. (pink, scored), and 50 mg. (yellow, scored).

Esidrix-K is especially indicated for patients in whom even moderate potassium loss can cause complications, or those whose condition predisposes to hypokalemia. Among candidates for Esidrix-K are patients taking digitalis for congestive heart failure, those with renal or liver disease, those under long-term treatment, and those on salt-restricted diets.

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(NITROFURAZONE 0.2% AND HYDROCORTISONE 1%, EATON)

INFECTED AND POTENTIALLY INFECTED DERMATOSES / PYODERMAS / ULCERS
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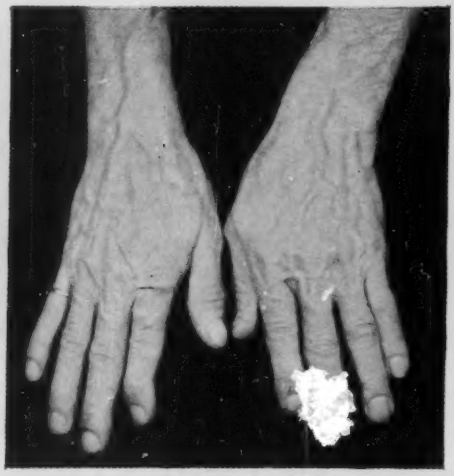

FURACIN-HC Cream combines the anti-inflammatory and antipruritic effect of hydrocortisone with the dependable antibacterial action of FURACIN®, brand of nitrofurazone—the most widely prescribed single topical antibacterial. The broad bactericidal range of FURACIN includes stubborn staphylococcal strains, and there has been no development of significant bacterial resistance after more than a dozen years of widespread clinical use. FURACIN is gentle to tissues, does not retard healing; its low sensitization rate is further minimized by the presence of hydrocortisone.

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Ravdin, I.S.: J.A.M.A. 171:1357 (Nov. 7) 1959.

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. . . meets these criteria with its fine mesh (44/36) and uniformly light impregnation with petrolatum. It comes to you pretested and prepacked in heat-sealed foil envelopes for assured sterility at the time of use. 'Vaseline' Sterile Petrolatum Gauze U.S.P. meets the specifications for listing in official catalogs and tables as Gauze, Petrolatum Impregnated (Petrolatum Gauze, U.S.P.) — for requisitioning by medical facilities of *USA, USN, USAF, VA*, and *USPHS* from their respective Supply Depots.

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Each PARAFON tablet contains:

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TYLENOL® Acetaminophen . . .	300 mg.	Superior analgesic in musculoskeletal pain

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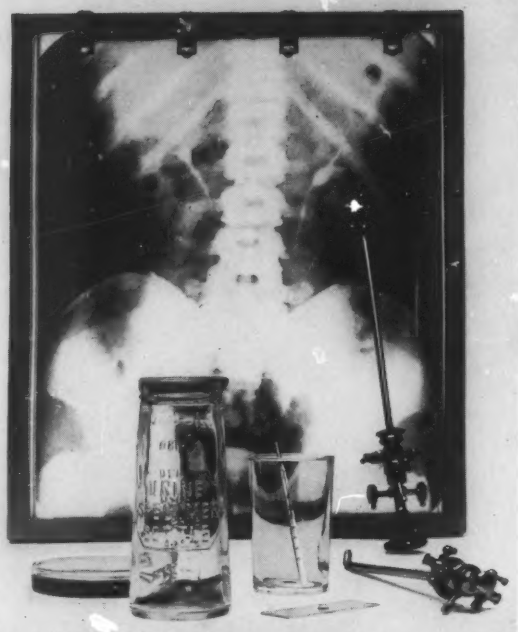

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Rapid peak attainment in 1 to 2 hours[1,2]... approximately one-half the time of other single-daily dose sulfas.[2] *High free levels*—as much as 95 per cent of circulating levels remaining in fully active unconjugated forms.[3] *Extremely low 2.7 per cent incidence of side effects* in toxicity studies on 223 patients.[4] Includes *total* reactions (subjective and objective), all temporary and rapidly reversed. No crystalluria reported.

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1. Boger, W. P.; Strickland, C. S., and Gylfe, J. M.: *Antibiotic Med. & Clin. Ther.* 3:378 (Nov.) 1956. 2. Boger, W. P.: In: *Antibiotics Annual* 1958-1959, New York, Medical Encyclopedia, Inc., 1959, p. 48. 3. Sheth, U. K.; Kulkarni, B. S., and Kamath, P. G.: *Antibiotic Med. & Clin. Ther.* 5:604 (Oct.) 1958. 4. Anderson, P. C., and Wissinger, H. A.: *U. S. Armed Forces M. J.* 10:1051 (Sept.) 1959.

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BRAND OF OXYTETRACYCLINE

INTRAMUSCULAR SOLUTION

conveniently preconstituted for prompt parenteral administration in office or at bedside

new 10 cc. vial permits greater economy, convenience, and flexibility in dosage

IN BRIEF

Terramycin Intramuscular Solution, a *preconstituted* parenteral form of oxytetracycline with 2% Xylocaine* as a local anesthetic, facilitates prompt initiation of broad-spectrum antibiotic therapy when immediate oral administration is inconvenient or impractical. There is a low incidence of irritation or pain at the injection site. Availability of the *new,* multi-dose 10 cc. vial permits greater *economy, convenience,* and *flexibility* in dosage. The dependability of Terramycin is based on broad antimicrobial effectiveness, excellent toleration, and low order of toxicity.

INDICATIONS: All oxytetracycline indications whenever initial or continuing therapy with I.M. injection is indicated. Compatible oral therapy may then be given with Cosa-Terramycin® Capsules or Cosa-Terrabon® Suspension. Effective against both gram-positive and gram-negative bacteria, rickettsiae, spirochetes, and large viruses, Terramycin therapy is indicated in a great variety of infections due to susceptible organisms. These include infections of the respiratory tract, ophthalmic and otic infections, gastrointestinal infections, genitourinary infections, soft-tissue infections, and many others.

ADMINISTRATION AND DOSAGE: For intramuscular injection only. Unless otherwise specified, a dose of 100 mg. every 8-12 hours, or a single daily dose of 250 mg. should be adequate for most mild or moderately severe infections. In *severe* infections, 100 mg. every 6-8 hours or 250 mg. every 12 hours may be necessary. Dosage for infants and children is proportionately less and should be determined in accordance with age and weight of the patient, and severity of infection.

SIDE EFFECTS AND PRECAUTIONS: Aside from occasional mild pain at injection site, adverse reactions (including allergic) have been rare. As with all I.M. preparations, injection should be made within the body of a relatively large muscle. After insertion of needle, aspiration should be attempted before injecting to avoid inadvertent administration into a blood vessel; care should always be taken to avoid injecting into a major nerve or its surrounding sheath. Subcutaneous and fat-layer injection may cause mild pain and induration, which may be relieved by an ice pack.

Use of antibiotics may result in an overgrowth of nonsusceptible organisms—particularly monilia and resistant staphylococci. If a new infection caused by a resistant pathogen appears, discontinue the medication and institute appropriate specific therapy as indicated by susceptibility testing.

SUPPLIED: *Terramycin Intramuscular Solution* is available in the new 10 cc. multi-dose vial, providing five 2 cc. doses, 50 mg./cc., and in 2 cc. prescored glass ampules, containing 100 mg. and 250 mg., packages of 5 and 100. For maximum rapidity of effect—*Terramycin Intravenous,* in vials of 250 mg. and 500 mg. (buffered with 1 Gm. and 2 Gm. ascorbic acid, respectively). Available for oral therapy: *Cosa-Terramycin® Capsules,* 250 mg. and 125 mg.; *Cosa-Terrabon® Oral Suspension* (preconstituted), 125 mg. per 5 cc. teaspoonful, in bottles of 2 oz. (60 cc.) and 1 pint; *Cosa-Terrabon® Pediatric Drops* (preconstituted), 5 mg. per drop (100 mg. per cc.), bottle of 10 cc. with calibrated plastic dropper. In addition, a variety of other systemic and local dosage forms are available to meet specific therapeutic requirements.

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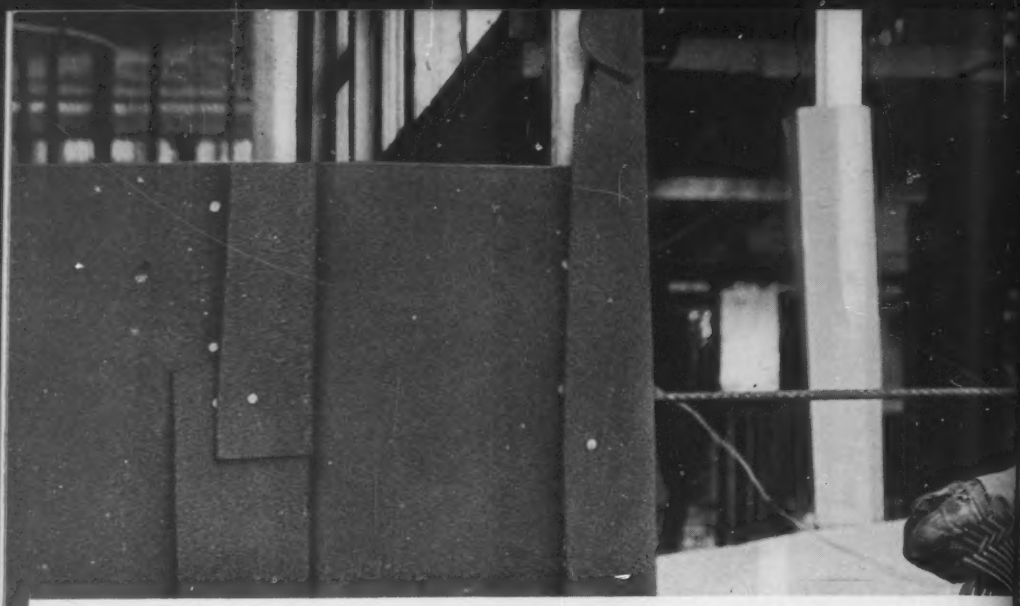

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Soma is unique because it combines the properties of an effective muscle relaxant and an independent analgesic in *a single drug.* Unlike most other muscle relaxants, which can only relax muscle tension, Soma attacks both phases of the pain-spasm cycle at the same time.

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SOMA®

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How you can help save your patients a month's pay

Kestler reports in J.A.M.A. (April 30, 1960) that conventionally treated low-back syndrome patients required an average of 41 days for full recovery (range: 3 to 90 days). The addition of Soma therapy in this comparative investigation reduced the average to 11.5 days (range: 2 to 21 days). With Soma, patients averaged full recovery 30 days sooner.

on the pathogenesis of pyelonephritis:

"An inflammatory reaction here [renal papillae] may produce sudden rapid impairment of renal function. One duct of Bellini probably drains more than 5000 nephrons. It is easy to see why a small abscess or edema in this area may occlude a portion of the papilla or the collecting ducts and may produce a functional impairment far in excess of that encountered in much larger lesions in the cortex."[1]

The "exquisite sensitivity"[2] of the medulla to infection (as compared with the cortex), highlights the importance of obstruction to the urine flow in the pathogenesis of pyelonephritis. "There is good cause to support the belief that many, perhaps most, cases of human pyelonephritis are the result of infection which reaches the kidney from the lower urinary tract."[3]

to eradicate the pathogens no matter the pathway

FURADANTIN®

brand of nitrofurantoin

High urinary concentration • Glomerular filtration plus tubular excretion • Rapid antibacterial action • Broad bactericidal spectrum • Free from resistance problems • Well tolerated—even after prolonged use • No cross resistance or cross sensitization with other drugs

Average Furadantin Adult Dosage: 100 mg. tablet q.i.d. with meals and with food or milk on retiring. *Supplied:* Tablets, 50 and 100 mg.; Oral Suspension, 25 mg. per 5 cc. tsp.

References: 1. Schreiner, G. E.: A.M.A. Arch. Int. M. **102**:32, 1958. 2. Freedman, L. R., and Beeson, P. B.: Yale J. Biol. & Med. **30**:406, 1958. 3. Rocha, H., et al.: Yale J. Biol. & Med. **30**:341, 1958.

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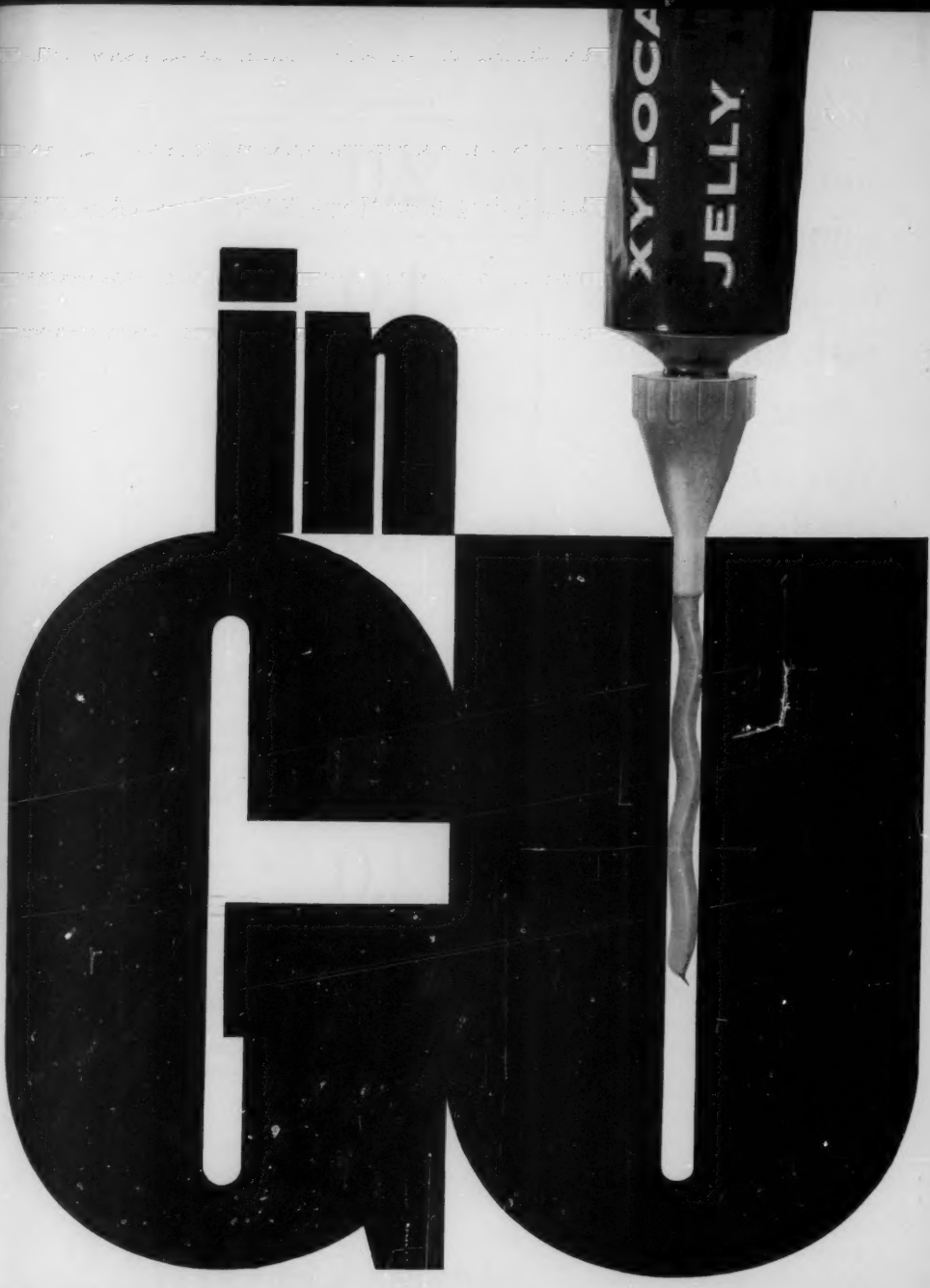

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8/7/57	1.0
10/2/57	1.0
11/29/57	1.0
1/17/58	3.0
2/14/58	3.0
3/28/58	2.0
5/5/58	1.5

Actual doses used to maintain optimum control in patient J.S., male, age 54[1]

For those diabetics who won't stick to their diets, add appetite-suppressing ***Didrex***† *(benzphetamine, 50 mg. per tablet).*

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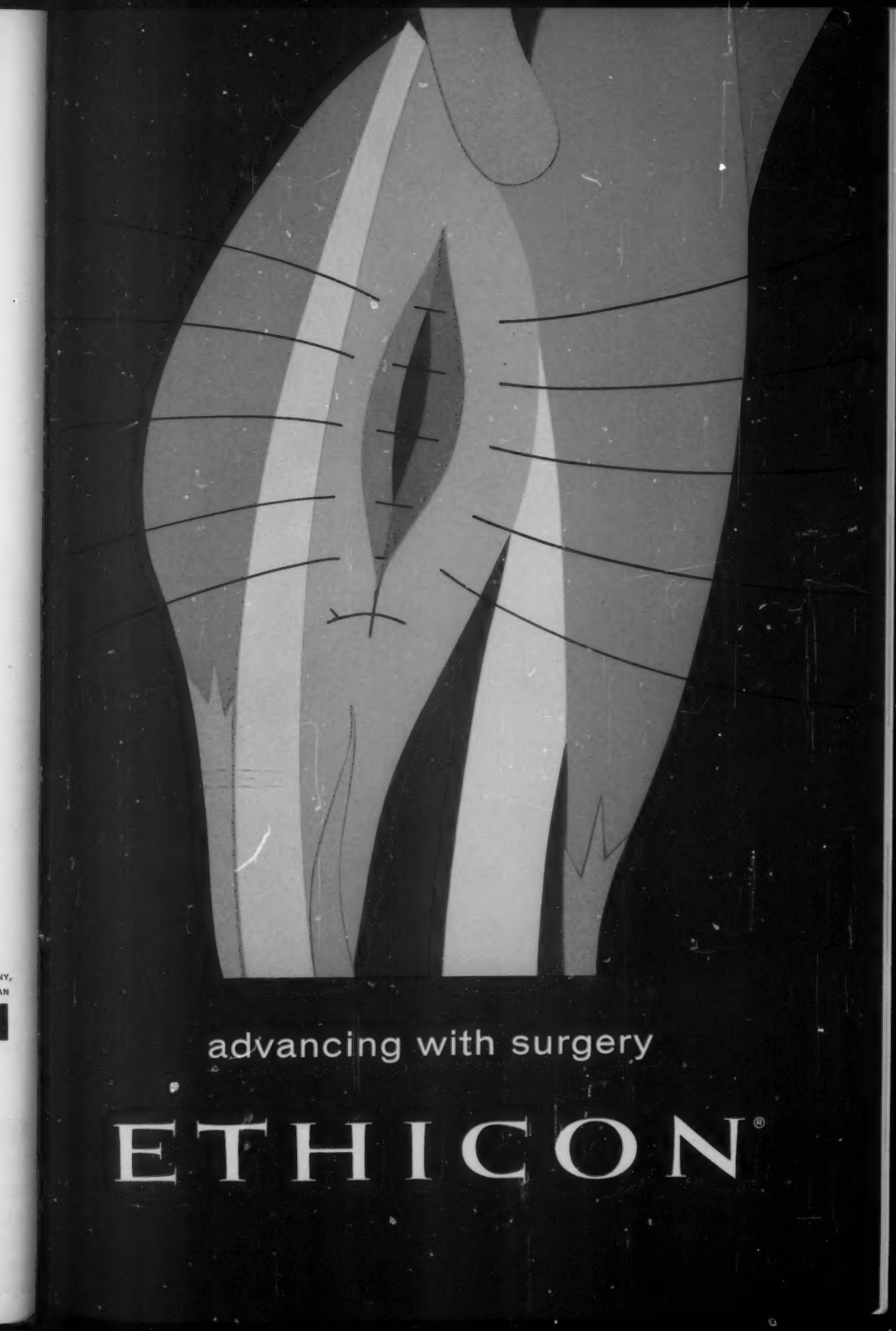
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a unique local anesthetic with "... outstanding features."[1]

Carbocaine combines the best characteristics of older local anesthetics with exceptional new advantages.

More potent
than procaine or lidocaine.[2]

•

Quicker onset of anesthesia
than obtained with other agents.[3]

•

More prolonged anesthesia
— lasts several hours.[1,4]

•

Greater safety
—low toxicity, virtually no vasodilatation,[1,5] epinephrine generally not required.

•

Local anesthesia extended
to many more patients and procedures.[4,5]

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Greater stability
—no risk of decomposition or loss of potency.

Carbocaine has been found suitable for elderly or poor risk patients, for patients with epilepsy or cardiac disease, as well as for many others in whom potent anesthetics are generally contraindicated.

For infiltration and nerve block, caudal and peridural block, and therapeutic block in management of pain.

How Supplied: For infiltration and nerve block: Carbocaine hydrochloride, 1 per cent and 2 per cent, in sterile saline solution, in multiple dose vials of 50 cc. For caudal and peridural block: Carbocaine hydrochloride, 1 per cent, in sterile modified Ringer's solution, in single dose vials of 30 cc.

References: 1. Sadove, M. S.: A preliminary report on Carbocaine, a new local anesthetic. Submitted for publication. 2. Luduena, F. P.; Hoppe, J. O.; Coulston, F., and Drobeck, H. P.: The pharmacology and toxicology of mepivacaine, a new local anesthetic, *Toxicol. & Appl. Pharmacol.* To be published. 3. Rovenstine, E. A.: Personal communication. 4. Young, J. A.: Upper arm block with Carbocaine (mepivacaine), a new anesthetic agent, *Anesth. & Analg.* To be published. 5. Griesser, Gerd: Erfahrungen mit einem neuen Lokalanestheticum, *Anaesthesist* 6:364, Oct., 1957.

Winthrop Laboratories
New York 18, N. Y.

Carbocaine (brand of mepivacaine), trademark reg. U. S. Pat. Off.

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each component contributes to the efficacy of

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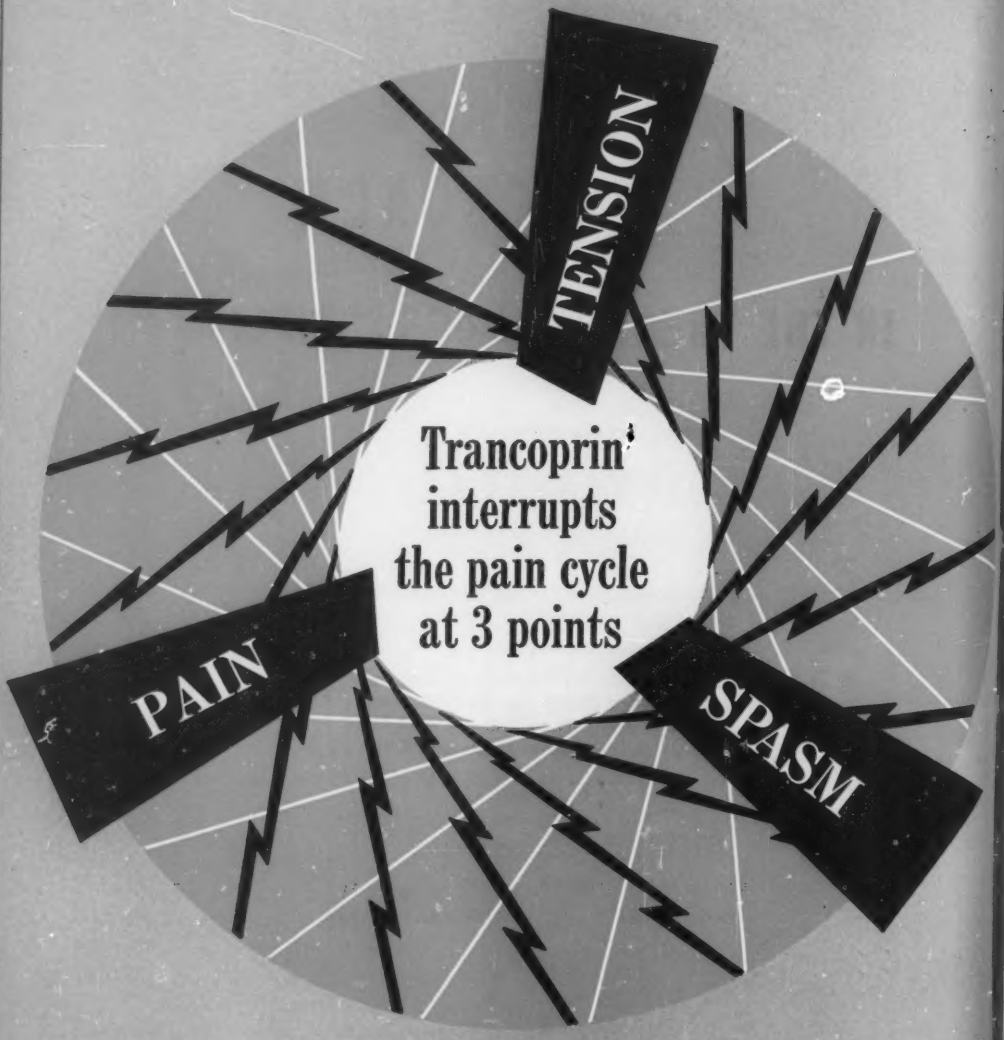

a broad spectrum non-narcotic analgesic

Trancoprin, a new analgesic, not only raises the pain perception threshold but, through its chlormezanone component, also relaxes skeletal muscle spasm[1-6] and quiets the psyche.[2,3-5,7]

The effectiveness of Trancoprin has been demonstrated clinically[8] in a number of patients with a wide variety of painful disorders ranging from headache, dysmenorrhea and lumbago to arthritis and sciatica. In a series of 862 patients,[8] Trancoprin brought excellent or good relief of pain to 88 per cent of the group. In another series,[9] Trancoprin was administered in an industrial dispensary to 61 patients with headache, bursitis, neuritis or arthritis. The excellent results obtained prompted the prediction that Trancoprin "... will prove a valuable and safe drug for the industrial physician."[9]

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No serious side effects have been encountered with Trancoprin. Of 923 patients treated with Trancoprin, only 22 (2.4 per cent) experienced any side effects.[8,9] In every instance, these reactions, which included temporary gastric distress, weakness or sedation, were mild and easily reversed.

Indications

Trancoprin is recommended for more comprehensive control of the pain complex (pain → tension → spasm) in those disorders in which tension and spasm are complicating factors, such as: headaches, including tension headaches / premenstrual tension and dysmenorrhea / low back pain, sciatica, lumbago / musculoskeletal pain associated with strains or sprains, myositis, fibrositis, bursitis, trauma, disc syndrome and myalgia / arthritis (rheumatoid or hypertrophic) / torticollis / neuralgia.

Dosage

The usual adult dosage is 2 Trancoprin tablets three or four times daily. The dosage for children from 5 to 12 years of age is 1 tablet three or four times daily. Trancoprin is so well tolerated that it may be taken on an empty stomach for quickest effect. The relief of symptoms is apparent in from fifteen to thirty minutes after administration and may last up to six hours or longer.

How Supplied

Each Trancoprin tablet contains 300 mg. (5 grains) of acetylsalicylic acid and 50 mg. of chlormezanone [Trancopal® brand]. Bottles of 100 and 1000.

Trancoprin Tablets / **non-narcotic analgesic**

References: 1. DeNyse, D. L.: *M. Times* 87:1512, Nov., 1959. 2. Ganz, S. E.: *J. Indiana M. A.* 52:1134, July, 1959. 3. Gruenberg, Friedrich: *Current Therap. Res.* 2:1, Jan., 1960. 4. Kearney, R. D.: *Current Therap. Res.* 2:127, April, 1960. 5. Lichtman, A. L.: *Kentucky Acad. Gen. Pract. J.* 4:28, Oct., 1958. 6. Mullin, W. G., and Epifano, Leonard: *Am. Pract. & Digest Treat.* 10:1743, Oct., 1959. 7. Shanaphy, J. F.: *Current Therap. Res.* 1:59, Oct., 1959. 8. Collective Study, Department of Medical Research, Winthrop Laboratories. 9. Hergesheimer, L. H.: An evaluation of a muscle relaxant (Trancopal) alone and with aspirin (Trancoprin) in an industrial medical practice, to be submitted.

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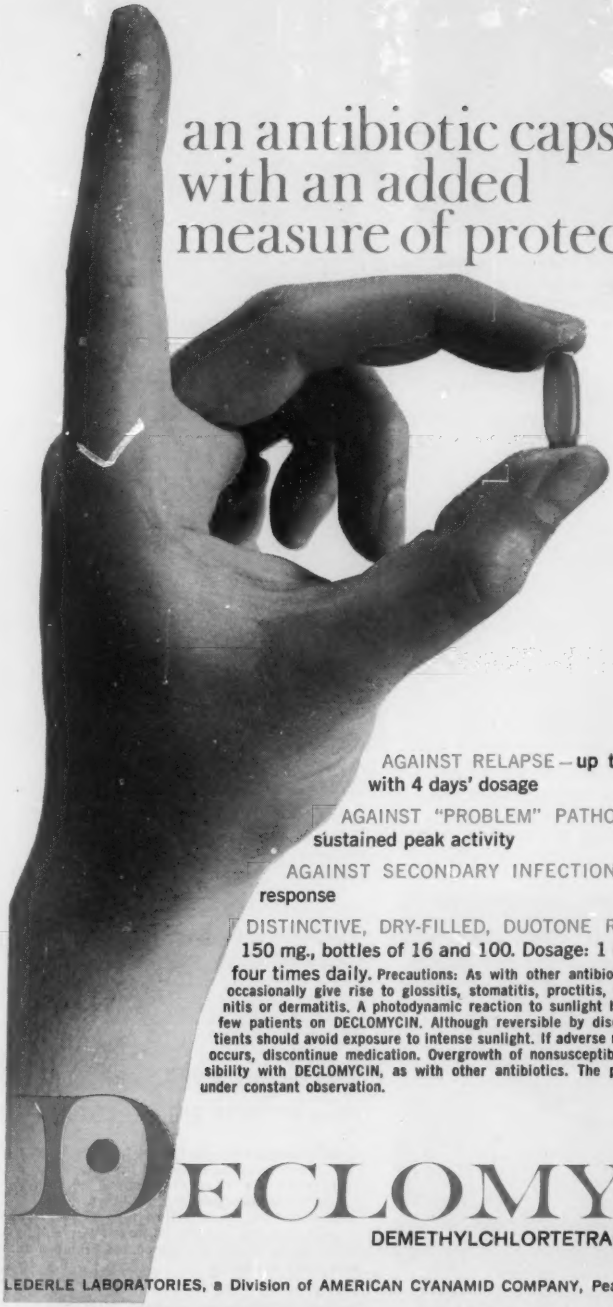

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AGAINST "PROBLEM" PATHOGENS—**uniformly sustained peak activity**

AGAINST SECONDARY INFECTION—**full antibiotic response**

DISTINCTIVE, DRY-FILLED, DUOTONE RED CAPSULES—**150 mg., bottles of 16 and 100. Dosage: 1 capsule (150 mg.) four times daily.** Precautions: As with other antibiotics, DECLOMYCIN may occasionally give rise to glossitis, stomatitis, proctitis, nausea, diarrhea, vaginitis or dermatitis. A photodynamic reaction to sunlight has been observed in a few patients on DECLOMYCIN. Although reversible by discontinuing therapy, patients should avoid exposure to intense sunlight. If adverse reaction or idiosyncrasy occurs, discontinue medication. Overgrowth of nonsusceptible organisms is a possibility with DECLOMYCIN, as with other antibiotics. The patient should be kept under constant observation.

DECLOMYCIN®

DEMETHYLCHLORTETRACYCLINE LEDERLE

LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY, Pearl River, N. Y.

Declomycin (Demethylchlortetracycline *Lederle*) available as GS No. GS-OOS-30416

After a history and a physical ruled out organic disease, the physician diagnosed the case as recurring states of anxiety. To relieve these symptoms for this busy housewife, he prescribes Meprospan-400, the *only* meprobamate in *sustained-release* form.

As directed, the patient takes one Meprospan-400 capsule at breakfast. Her symptoms of tension and nervousness are soon relieved, and she will not have to remember to take another capsule until dinnertime.

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most widely prescribed tranquilizer...
most convenient dosage form...

ONE CAPSULE LASTS 12 HOURS

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400 mg. MILTOWN® SUSTAINED-RELEASE CAPSULES

Usual dosage: One capsule at breakfast lasts all day, one capsule with evening meal lasts all night. **Supplied:** Meprospan-400, each blue-topped *sustained-release* capsule contains 400 mg. Miltown. **Also available:** Meprospan-200, each yellow-topped *sustained-release* capsule contains 200 mg. Miltown. **For children:** Capsules can be opened and the coated granules mixed with soft foods or liquids.

Both potencies in bottles of 30.

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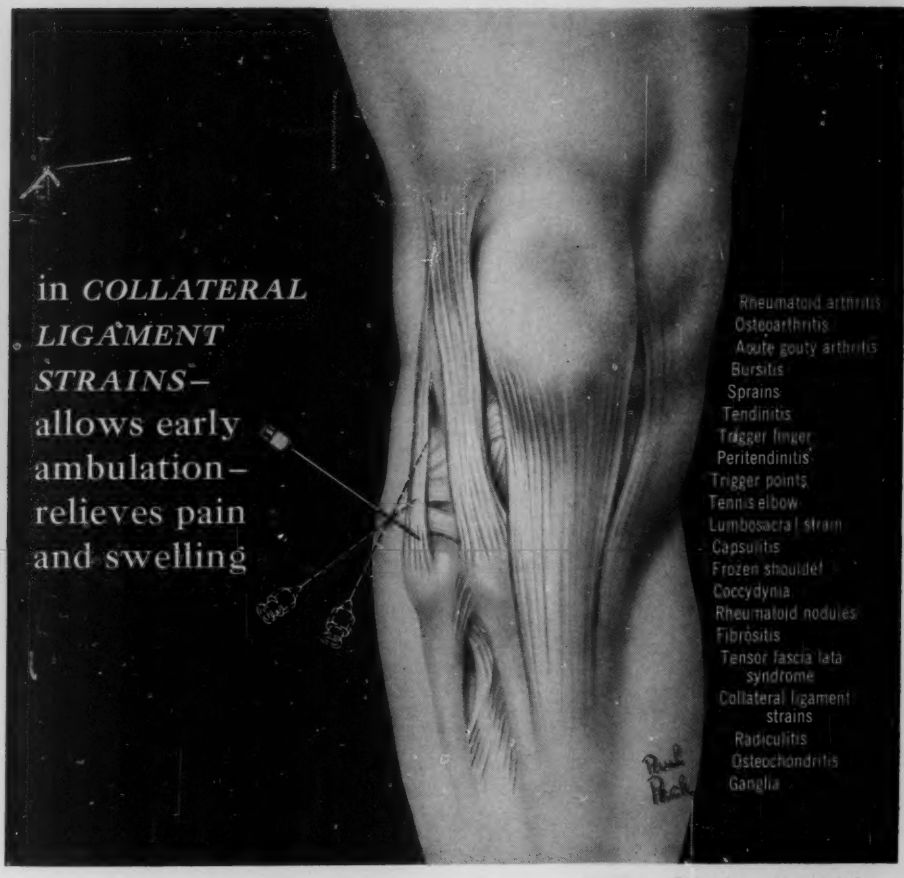
WALLACE LABORATORIES / *Cranbury, N. J.*

ME-3353

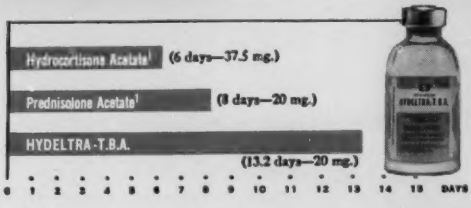
HYDELTRA®-T.B.A.

(Prednisolone tertiary-butylacetate, Merck)

for relief that lasts—longer



Duration of relief exceeds that provided by any other steroid ester


Hydrocortisone Acetate¹ (6 days—37.5 mg.)
Prednisolone Acetate¹ (8 days—20 mg.)
HYDELTRA-T.B.A. (13.2 days—20 mg.)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 DAYS

Dosage: the usual intra-articular, intra-bursal or soft tissue dose ranges from 20 to 30 mg. depending on location and extent of pathology.

Supplied: Suspension 'HYDELTRA'-T.B.A.—20 mg./cc. of prednisolone *tertiary*-butylacetate, in 5-cc. vials.

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INSPIRED RELIEF IN SECONDS[1]

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A TEXTBOOK THERAPY FOR ASTHMA

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"...the greatest improvement (in vital capacity-time relationship) occurs during the first second."[1]

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- "The preparation we have found most effective is called 'Vaponefrin'."[3]
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- Its exclusive baffle produces a voluminous mist of particles with average radii of 1 micron.[1]
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References:

1. Segal, M. S., and Dulfano, M. J.: Chronic Pulmonary Emphysema, New York, Grune & Stratton, 1953, p. 99. 2. Farber, S. M., and Wilson, R. H. L.: Ann. Int. Med. 50:1241, 1959. 3. Barach, A. L., and Cromwell, H. A.: Med. Clin. No. America, May 1940, p. 621. 4. Bickerman, H. A., and Barach, A. L.: Drugs of Choice, 1960-1961 (W. Modell, ed.), St. Louis, The C. V. Mosby Co., 1960, p. 524.

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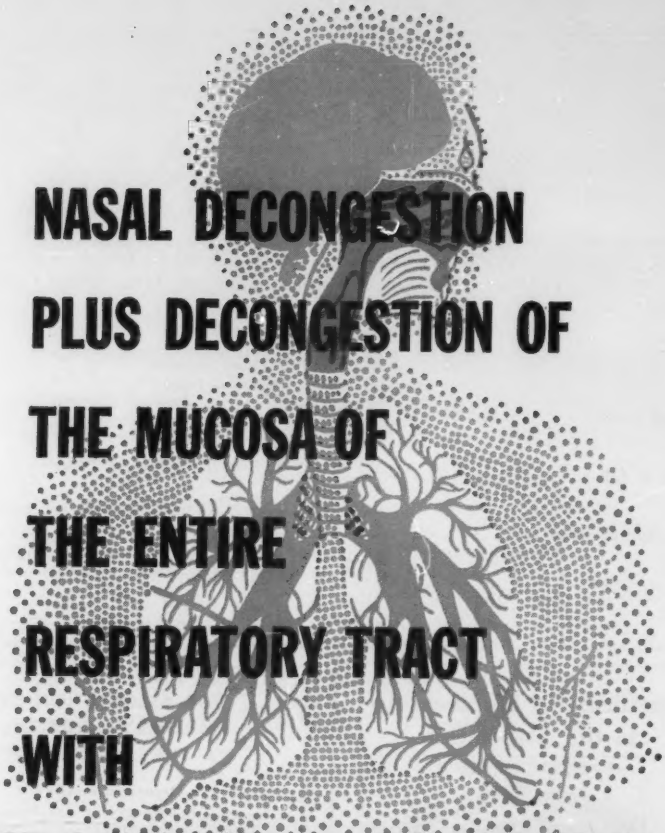
Documented by 163 published clinical evaluations and standard textbook references.



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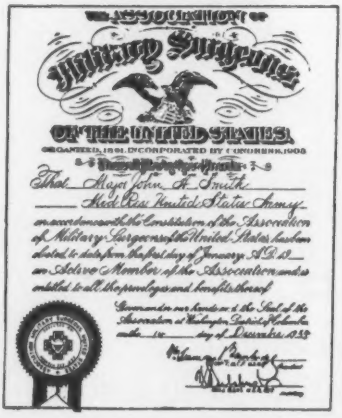

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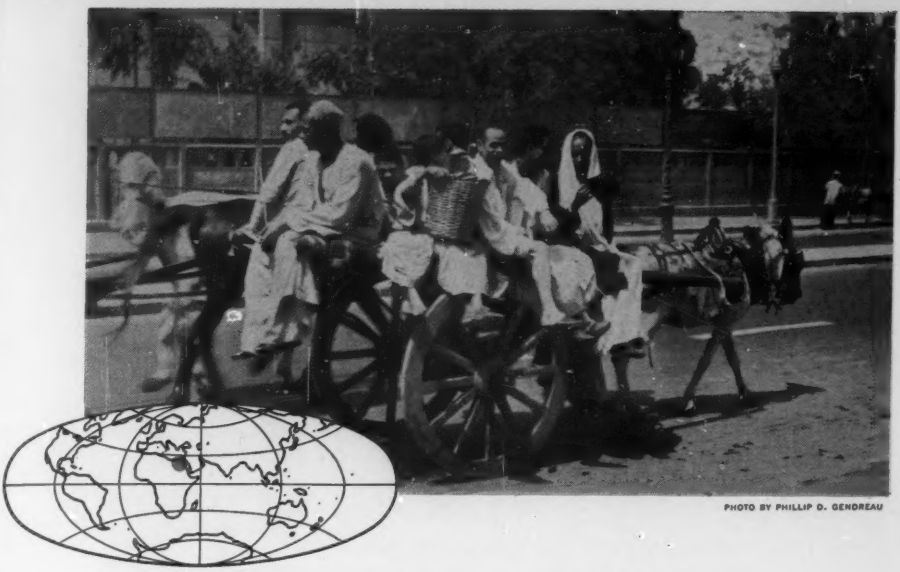

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world-wide evidence favors Furoxone for bacterial diarrheas

In Egypt, Furoxone® effective against shigella strains now resistant to other antimicrobials

Cairo investigators administered FUROXONE for one week to 37 patients with shigellosis, reported all 37 clinically cured, 35 free of shigella prior to completion of FUROXONE therapy.

FUROXONE was tested in light of evidence that shigella strains resistant to sulfonamides, tetracyclines and chloramphenicol now exist. Observations: "All shigella isolated were sensitive in vitro to [FUROXONE]". Clinically, FUROXONE "significantly reduces the duration and severity of the diarrhea and effects bacteriological cure .... The absence of toxic or side effects gives [FUROXONE] an advantage not possessed by the other drugs in current use."

Musgrave, M. E. and Arm, H. G.: Antibiotic Med. & Clin. Therapy 7:17 (Jan.) 1960.

FUROXONE LIQUID: a pleasant orange-mint flavored suspension containing FUROXONE 50 mg. per 15 cc., with kaolin and pectin ■ for patients of all ages (may be mixed with infant formulas, passes through a standard nursing nipple) ■ Supply: bottles of 240 cc. **FUROXONE TABLETS:** 100 mg., scored, bottles of 20 and 100.

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Available on federal supply schedule, contract GS-00S-21424

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...the first cholesterol-lowering agent to inhibit the formation of excess cholesterol within the body.

...reduces both serum and tissue cholesterol levels, irrespective of diet.

...no demonstrable interference with other vital biochemical processes reported to date.

...toleration and absence of toxicity established by 2 years of clinical investigation.

...convenient dosage: One 250 mg. capsule daily, before breakfast.

Clinical findings of therapy with MER/29 establish it as an aid to patients with hypercholesterolemia and conditions thought to be associated with it, such as

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References: 1. Senear, F. E., and Haeberlin, J. B., Jr.: M. Clin. North America, March 1958. 2. Brunsting, L. A.: Postgrad. Med. 26:431, 1959. 3. Crawford, L. V.: J. Pediatrics 53:99, 1958. 4. Shaw, C.: Clin. Med. 5: 1355, 1958. 5. Glaser, J.: Allergy in Childhood. Springfield, C. C. Thomas, 1956.

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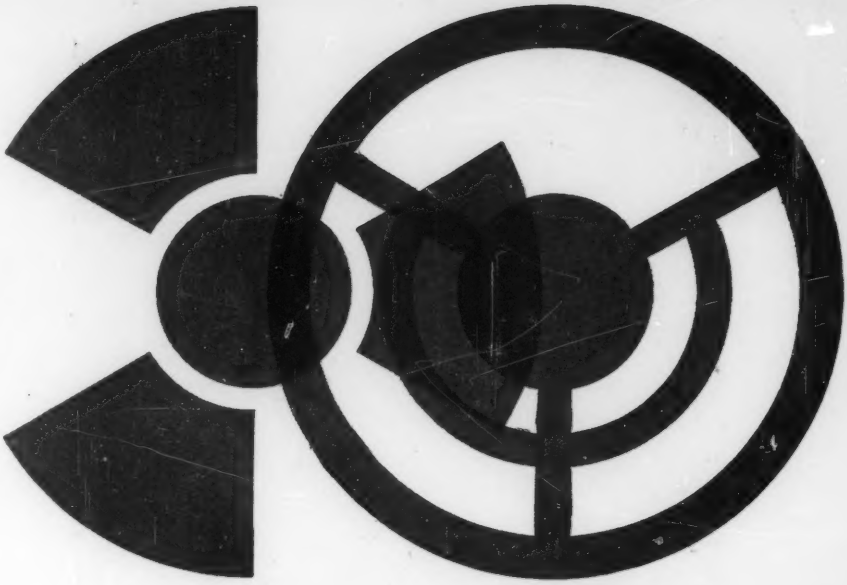

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